INDEX.

Illustrated Articles Indicated by *.

Acme nut tapper and bolt cutter, April 3 p 1

Adams & Elting Company, Jan 2, p 106 Adler, H., Company, May 8, p 27 Advertising:

How to write advertisements, April 17, p 60*
"Simply a record," Jan 2, p 78
Up to date hardware advertising, Feb

20, p 54d*
(See also Window display.)
Advertising cuts of The Iron Age, April
17, p 70*

Agricultural implements in Southern Russia, Jan 23, p 54 Air rifles:

Benjamin, Feb 6, p 63*

Single shot and repeater rifles, Feb 6,

Air ships and flying machines, May 22, p 25

Alaska Freezer Company, May 22, p 61 Alberger cooling towers, May 1, p 14* Algoma Steel Company, April 17, p 16 Alleghany Ore & Iron Company, June 5, p 7

Allen, George B., Portrait, May 8, p 50* Allen, H. P., Address by, Feb 27, p 69 Allis-Chalmers Company: Annual report, June 5, p 34

Increased wages of employees, March 20, p 23 Large shaft built, April 3, p 7*

Aluminum: Generation of intense heat through

the combustion of aluminum, May 22, p 17 In the electrical industries, Jan 16 p 52

Aluminum casting, A difficult, April

10, p 13*
Amalgamated Association:
Abolition of Mill Committee, Feb 20, p 7

Convention at Wheeling, Jan 9, p 22 Amalgamated scales, May 8, p 23; June 12, p 21; 19, p 40 American Blower Company, Jan 23, p

17

American Brake Shoe & Foundry Company, Feb 6, p 45
American Bridge Company, New Pittsburgh plant, June 26, p 5
American Chemical Society, Jan 16, p

34

American educational wisdom, Jan 30, p 20
American Engineering Works, Jan 2, p 48

American

June 5, p 36; 19, p 33, 37; 26, p 12 rican - Hardware Corporation, March 20, p 52 American

March 20, p 52

American Hardware Manufacturers'
Association, Feb 27, p 58; May 1, p 52; June 12, p 53; 19, p 69

American Institute of Mining Engineers, May 15, p 27; 22, p 4

American Iron & Steel Association and the Babcock bill, April 24, p 27

American Iron & Steel Mfg. Company, Financial statement, Feb 20, p 12

American McKenna Process Company.

American McKenna Process Company, Jan 2, p 64 Rail mill at Fremley Point, N. J.,

Jan 2, p 64
Rail mill at Fremley Point, N. J.,
Mar 20, p 20*
American plan, The, Mar 27, p 25
American Radiator Company, Financial
statement, March 13, p 43
American Refractories Company, May

22, p 44 American Society for Testing Materials. Annual meeting, June 19, p 8; 26,

American Society of Civil Engineers, Rail Committee, March 20, p 26 American Society of Mechanical E

American Society of Mechanical Engineers, Convention, April 24, p 22; June 5, p 22

American Steel Foundries' Company, May 15, p 42; June 5, p 54

American Steel & Wire Company, Pension for employees, Jan 9, p 31;

16, p 51 American Stove Company; a consolidation, Jan 16, p 19 American structural work in the Brit-

ish colonies, Jan 9, p 3 American Trading Company, Jan 30, p

American Woodworking Company, Reorganization, Jan 2, p

America's spheres of influence in Asia,

Jan 2, p 13 Anti-injunction bill, May 8, p 27; 15, p

Anti-rattler, X L, March 27, p 60* Apprenticeship question, Feb 27, p 21
Arbor press, Le Blond, March 20, p 9*
Ardrey, R. L. Manufacturers interested in the packing house suit, June 5, p 12 Arizona Copper Company, March 13, p

17

Arkansas Retail Hardware Dealers' Association, June 26, p 55 Arms and ammunition trade in Great

Britain, Feb 27, p 56 Armstrong, S. V., Portrait, April 10, p 60*

Armstrong machinists' tools, March 6, p 43

Ashland Iron & Mining Company, Jan 9, p 35

Asia, America and Europe in, Jan 2, p 13, 82

p 13, 82
Association loyalty, Feb 20, p 52
Atlantic Rubber Shoe Company, E
tracts from charter, Jan 2, p 47
Atlas Tack Company, June 12, p 56
Atmospheric Product Company, 1
agara Falls, May 15, p 12
Augers bit, Lightning, Feb 27, p 90*

Augers: Stearns' adjustable, May 15, p 65* Wood's Ideal, May 15, p 64* Australia:

American exports to, April 3, p 58 American prospects in, May 15, p 50 Bonus in the iron industry, March 27,

p 10 British hardware exports to, April 3,

p 58
Export trade, Jan 2, p 80
Hardware trade, Feb 6, p 60c
The Iron Age in, Jan 2, p 93
Iron and steel manufacture, June 12,
p 14

Iron industry, June 19, p 29

Iron industry, June 19, p 29
Iron works proposed, May 15, p 43
Tariff, Jan 2, p 83; 16, p 60; March
20, p 50; May 29, p 56
Tin and tin mining, Feb 6, p 9
Australian news, Feb 6, p 27; March
20, p 50; April 3, p 58; May 29, p
55; June 12, p 51
Austria-Hungary, The trade of, March
27, p 58

Automatic Weighing Machine Company, Jan 16, p 49

Automobile, Cost of running a gasoline, April 10, p 13

Axe consolidation, Feb 20, p 53
Axe racks, Jan 23, p 51*: 30, p 48*; Feb
6, p 60d*: March 20, p 57*
Axes, Marble safety pocket, April 10, p

65* Ayer, Ira, on drawback laws, May 22,

Babcock, Representative, and the Ways and Means Committee, Feb 6, p 27 Babcock bill, Jan 16, p 36; April 3, p 6; 24, p 27

Badger punch and shear, Jan 2, p 45* Baird Machinery Company, June 12, p

Baker, J. H., Mfg. Company, Jan 30, p

Baldwin, Mathias, and the American

Baldwin, Mathias, and the American locomotive, Feb 20, p 26
Baldwin Automobile Mfg. Company, Jan 23, p 46
Balkam, S. D., Address by and portrait, Feb 20, p 74*
Bank circulation, Contraction of, Jan

23, p 27 Bank currency, Emergency, March 27,

p 25 Banking bill, Fowler, April 10, p 18 Bankrupt, Distributing the assets of a, Jan 16, p 31

Jan 16, p 31

Bankruptcy law, Proposed amendments, May 1, p 20; 8, p 3

Banks, Small national, Jan 2, p 55

Barnard & Leas Magnetic separator, May 22, p 9*

Barnes, A. J. Introducing American goods abroad, Feb 13, p 48

Barnes, C. N., Portrait, Feb 27, p 72*; March 27, p 54*

Barnett, S. The diamond in wire drawing, May 29, p 8

Barr four-spindle drill, Feb 6, p 24*

Barrow, Baker ball bearing, June 26, p 68*

Barrow Hematite Steel Company, Eng-

Barrow Hematite Steel Company, England, Feb 13, p 16; March 27, p 20; April 3, p 17 Bartlett fueling scow, Feb 13, p 7*

Basic open hearth steel prospects, Jan

30, p 25
Bassett, A. J., Biographical sketch of,
May 8, p 54*
Battery. (See Storage Battery)

Battery. (See Storage Battery) Baxter, J. W., Portrait, April 10, p 59* Bayles, J. C. The differentiation of the Bayles, J. C. The differentiation of the American locomotive, Mar 6, p 29 Bayley high speed engine, Jan 2, p 50* Beagle, H. W. Window display and the art of selling, Feb 27, p 76 Becker-Brainard vertical miller finishing connecting rod brass, Jan 2,

ing connecting rod brass, Jan 2, p 40*

Bed, Camp, June 19, p 87*

Beebe, M. C. The Nernst lamp, May 29, p 7*

Beeche, Duval & Co., Jan 2, p 78

Beers, H. H., Portrait, June 26, p 52*

Belgium iron and steel makers, Jan 16, p 29

Rells Duplex push button door bell. Mar

Duplex push button door bell, Mar 27, p 60°
East Hampton auto, June 12, p 59°
Navajo cow bell, June 19, p 87°
Benedict, M. S., Mfg. Company, Jan 23, p 58
Bennett, Irby, Portrait, June 26, p 51°
Berryman, J. B. Piping materials for steam plants, June 5, p 4
Berthet, Felix D., Blographical sketch of, May 1, p 56°
Bessemer Coke Company, Jan 30, p 5
Bessemer practice and the scarcity of scrap, May 22, p 24
Bettes, H. S., Hardware Company, Jan 16, p 58

16, p 58
Bicycles:
Eagle, June 5, p 73*
Elk, Jan 9, p 65; March 27, p 59
Iver Johnson, Feb 6, p 64*
Bignall & Keeler duplex pipe machine,
Feb 13, p 1*

Billings & Spencer straight tail dog,

Billings & Spencer straight tail dog,
May 15, p 18*
Bindley, John, Biographical sketch of,
April 10, p 53*
Birkinbine, John. Sunrise iron mines
in Wyoming, Feb 6, p 19*
Bit stock, Angle boring, Feb 20, p 81*
Black, J. W., Address by, Feb 20, p 76
Blackiston, G. P. The shaker, an improvement in crucible steel practice, April 24, p 14*
Blake & Johnson thread rolling machine, June 26, p 1*

chine, June 26, p 1*
Blast furnace gases, Utilization of, Feb

20, p 28

Blast furnaces: Building in the United States, May 15, p 25

Capacity increasing, April 10, p 25; 17, p 29

English, Improving, on American lines, March 27, p 13
German syndicates, Feb 13, p 29
Toledo's new furnace, Feb 13, p 12
Block, Tarbox metal, May 1, p 63*
Blockow, Vaughan & Co., Limited, Feb 27, p 10
Blooming mill German May 22, p 15*

Blooming mill, German, May 22, p 15*

Buffalo electric cupola, March 6, p 43 Improved, for gas producers, Mar 6, p 18*

Blowing engines at Toledo Furnace Company, March 27, p 13 Bogardus, W. P., Address by and por-trait, Feb 27, p 62*; March 6, p 71*; 27, p 55* Boiler regulations, United States,

Changes in, Feb 20, p 20 Boiler stay making machine, April 17,

p 1* Boilers:

Feed water for, March 27, p 6
Kingsley, Feb 13, p 20*
Bolt consolidation, June 5, p 61
Bolt cutter, Acme, April 3, p 3*
Bolton, R. P. Depreciation, maintenance and interest charges, Feb

27, p 44 Bolts:

Expansion, March 6, p 45*
Expansion, for electrical work, Jan
23, p 26*
McCabe expansion, June 26, p 70*
Bone cutters, Mann, June 5, p 72*
Book reviews:
American Standard Specifications for

American Standard Specifications for Steel, A. L. Colby, March 27, p 22 Architectural Engineering, J. K. Frei-Brass

tag, March 20, p 26 ass Founders' Alloys, J. F. Bu-chanan, April 3, p 28

chanan, April 3, p 28
British Railway Position, G. Paish,
May 22, p 27
Cast Iron, W. J. Keep, March 27, p 23
Dipping, Burnishing, Lacquering and
Bronzing Brass Ware, May 8, p 25
Directory of Directors, May 8, p 25
Empire of Business, Andrew Carnegie, May 22, p 28
Furnace Draft, W. W. Christie, May
8, p 24

Furnace Draft, W. W. Christie, May 8, p 24 Iron and Steel Works of the U. S., March 27, p 22 Light, Heat and Power in Buildings, A. D. Adams, Jan 30, p 41 Manual of Statistics, May 22, p 27 Metallurgy of Cast Iron, T. D. West, March 27, p 23 Methods of Iron Analysis, F. C. Phil-

March 27, p 23
Methods of Iron Analysis, F. C. Phillips, March 27, p 22
Municipal Engineering and Sanitation, M. N. Baker, April 3, p 28
National Iron and Steel Coal and Coke Blue Book, May 22, p 27
Power and Power Transmission, E. W. Kerr, March 20, p 26c
Practical Calculations of Dynamo-

Practical Calculations of Dynamo-Electric Machines, May 22, p 28 Saw Filing, R. Grimshaw, March 27,

Smoley's Tables, C. Smoley, Feb 13, p

Steam Boiler Economy, William Kent, May 8, p 24 Use of the Slide Rule, F. A. Halsey,

March 20, p 26

Book reviews (continued):

Velocity Diagrams, C. W. Mac Cord, Feb 13, p 32 Boring and turning mill, Sellers 28-foot,

Jan 23, p 4* Boring machine, Pittsburgh, Jan 23, p

Bowman, F. M. Steel and concrete coal storage plant, June 12, p 8*
Boxwood and Ivory Rules, List of, Jan 2, p 76

s, steel shop piling, March 20, p

Boyd, R. W., Portrait, Feb 6, p 59* Brackets:

Melchoir-Kade adjustable, June 19, p

Wisconsin adjustable, Jan 9, p 68*
Brady, A. F. Social side of business
life, Feb 6, p 58
Brands, jobbers' special, June 12, p 45
Brass melting furnace, Charlier rolling
oil, Feb 13, p 17*
Brass trade in Birmingham, Jan 2, p
41

Breech caps, Winchester smokeless, May 8, p 64* Breeching, Flexible metallic, Jan 2, p

109 Brick, from limestone waste, March 13, p 26

Cable making on East River bridge, May 8, p 8* East River, New bridge, Jan 2, p 11*

Largest cantilever, June 19, p 2 Single grade of open hearth steel for,

June 19, p 9
Bright, G. H. Local hardware associa-

Bright, G. H. Local hardware associations, Feb 20, p 77
Brighton gas and gasoline engines, Jan 30, p 17*
Briscoe Mfg. Company, May 15, p 57

Bristol recording water level gauge, April 17, p 17* British Columbia's iron resources, June

26, p 23

26, p 23
British engineering trade, Agreement in the, March 6, p 31
British trade unions, Responsibility of, March 27, p 26
Bronze, Effect of temperature on the physical qualities of, March 6, p 26
Brown, M. M., Portrait, April 10, p 60*
Brown & Sharpe Universal Milling Machine, March 20, p 1*

chine, March 20, p 1*
Bryan, S. S., Address by and portrait,
April 3, p 53*
Bryan, W. H. Smoke abatement in St.
Louis, Feb 13, p 8*

Buckeye Malleable Iron & Coupler Company, June 5, p 49
Buenos Ayres,, Trade in, May 15, p 49
Buffalo blast furnaces, May 15, p 26

Buffalo blast furnaces, May 15, p 26
Buffalo Forge Co.:
Engine with direct connected generators, Jan 16, p 17
Forge, Jan 2, p 49*
Builders' hardware, Introducing abroad, Jan 9, p 58; 16, p 59
Buildings:

Buildings: Dome of Chicago building, June 19,

p 1*
Frick building in Pittsburgh, Jan 9, p 11; March 20, p 22 High buildings liable for peculiar

damages, June 26, p 4 Life of steel frames, March 27, p 27;

April 3, p 26 Steel consumption in buildings, Feb

27, p 28 Bullet shells, Elterich, May 15, p 65* Bullets:

32-caliber rifle, March 27, p 62* Ideal series of 25-caliber, Jan 23, p 62*

Business methods:
Care of prices, quotations and catalogues, May 29, p 52
Cash discounts, Feb 27, p 58
Conducting, a bardwayer bysiness

Conducting a hardware June 26, p 57 business,

Contracts, Interpretation of, May 8, p 57; June 19, p 70 Co-operative buying, Feb 13, p 58 Credit, The proper basis of, June 19,

Credits, March 6, p 65b, 89; 13, p 55

Business methods (continued):
Credits and collections, Feb 6, p 59
Credit business, Disadvantages of,
May 15, p 57

Efficiency in store management, Jan 30, p 54

30, p 54
Grading prices, May 8, p 57
Marking goods, June 26, p 59
Honorable success, March 6, p 74
Price system of Scofield Company,
Jan 9, p 61*
Prices, Grading of, May 8, p 57
Pricing stock in plain figures, Jan 9, p 60
Receipts for remittances, Jan 9, p 59

Receipts for remittances, Jan 9, p 59 Syndicate buying, May 8, p 57 Trade mismanagement, June 19, p 58 (See also Advertising; Hardware mer-chants; Window display.)

Business outlook and labor, April 10, p 19 Buyers' syndicates in Germany, Feb 13, p 26

Buying, Co-operative, Feb 13, p 58

Nails, butts, hinges, &c., Feb 27, p
59* Cabinets:

Tool, June 19, p 84

Warren, Jan 2, p 109*
Cable making on the East River bridge, May 8, p 8*
Cables, Telegraph, Australian, Jan 2, p 18

Cabot insulating and deafening quilt,

Cabot insulating and deafening quilt,
Feb 6, p 62
California Hardware Association map,
April 10, p 63
California hardware trade, Feb 6, p 61
California State Retail Hardware Association, March 20, p 46; April 10, p 56
Caliners: Calipers:

Calipers:
Columbia, May 8, p 63*
Rex, March 6, p 96*
Callahan, J. H., Portrait, May 8, p 49*
Calorific Heater & Mfg. Company, May 15, p 2 Calorimeter, Thomson coal, June 12, p

10 Cambria Steel Company:

Annual report, Feb 6, p 24

New works, Feb 6, p 10*

Camming automatic screw machines.

Feb 20, p 16*

Can opener, Derby Twentieth Century.

Jan 9, p 67*

Canada.

Canada: Algoma Tube Works, Jan 9, p 13 Boards of Trade Conference, June 12,

p 3
Coal and steel merger, May 1, p 25
Coke, Scarcity of, Jan 9, p 13
Iron and steel developments, May 15,

Locomotive industry, Jan 23, p 8 Mineral production in 1901, March 20, p 26a

p 26a
Nickel export duty, May 1, p 25
Ontario mines output, May 29, p 18
Pig iron production, March 6, p 25
Rainy River R. R., Jan 9, p 13
Shipbuilding, Jan 23, p 8; Feb 20, p
23; May 15, p 11
Tariff, Higher, on American goods,
May 29, p 18
Tariff, possibilities, Feb 20, p 22

Tariff possibilities, Feb 20, p 23 Trade and commerce report, Feb 6, p 4

Manufacturers' Canadian Manufacturers' Association and more protection, Feb 6, p 3 Canadian news, Jan 9, p 13; 23, p 8; Feb 6, p 3; 20, p 23; March 6, p 13; 20, p 26a; April 3, p 21; 17, p 20; May 1, p 25; 15, p 11; 29, p 18; June 12, p 7; 26, p 42 Canadian Niagara Power Company. Canadian

June 19, p 17
Cannon, Winchester breech loading,
March 27, p 59*
Cap crimper and fuse cutter, June 12.
p 58*
Car axlo N

Car axle, New semi-hollow, May 22, P 41

Car building in 1901, Jan 2, p 42 Car famine, Feb 27, p 5; March 6, p 15. Carloads, Increase of, Feb 27, p 28 Car mover, Zelnicker, March 27, p 10* Car wheel press, Putnam 200-ton hy-drostatic, Jan 2, p 26* Car wheels:

Decadence of the cast iron, Jan 2, p 57; 16, p 48

Metallography in manufacture, Feb 20, p 21*

Reimportation of domestic, May 29,

p 17 Rolling mill for steel, April 10, p 16* Solid rolled steel wheels, June 19. p

Cars:

Cinder car, Tread-kill, May 29, p 14* Steel construction, May 22, p 5 Carnegie, Andrew, as a plumber, May 29, p 16

Carnegle Institution, Jan 16, p 32 Carnegle Steel Company vs. Cambria Iron Company, May 8, p 43; 22, p 7

p 7
Carpenter Steel Company's industrial railway, Feb 20, p 25
Carpet stretcher, King, May 15, p 63*
Carpet sweepers, National roller bearing, April 3, p 65*
Carson, J. B., Portrait, March 6, p 74*
Cart, Lineman's, June 26, p 69*
Carter, C. B., Portrait, June 19, p 57*
Cartridge, Ballard & Marlin, June 26, p 66*
Case, Sliding door sample case, June 7

Case, Sliding door sample case, June 5,

Case, Sliding door sample case, June 5, p 65*
Cash discounts, Feb 27, p 58
Casselberry, A. Q., Address by and portrait, April 3, p 55*
Casters, Ball bearing, Jan 9, p 66*;
March 20, p 54*; May 22, p 68*
Castings, Big contract for iron, June

12, p 25
Catalogues, Jobbers' and the manufacturers', Feb 27, p 58, 67
Cattaraugus Cutlery Company, Feb 6,

p 62
Cedar Point furnace, Jan 23, p 2
Census report on industrial consolidations, Jan 2, p 68
Central American notes, Jan 2, p 39; 23,

p 29

p 29
Central Mining Institute, Germany,
Jan 9, p 49
Central Pennsylvania news, Jan 9, p
11; 16, p 17; 23, p 2; 30, p 29; Feb
6, p 25; 13, p 28; 27, p 22; March
6, p 22; 13, p 22; 27, p 9; April 3,
p 32; 10, p 21; 17, p 16; 24, p 26;
May 8, p 22; 15, p 23; 29, p 39;
June 5, p 34; 19, p 7
Chain machinery, Manufacture of, Jan
16, p 23; June 12, p 24
Chain making machine, Spuhl, May 22.

Chain making machine, Spuhl, May 22,

p 1* Chain testing machine, 300-ton, May 22, p 6*

Chains:

Renold silent, in a structural shop, March 6, p 1* Standard dimensions for roller, Jan

Standard dimensions for roller, Jan 9, p 32
Charcoal briquettes from wood waste in Sweden, Jan 30, p 22
Charlier rolling oil melting brass furnace, Feb 13, p 17*
Chase, A. J., Address by, March 6, p 78
Chester, Large foundry proposed at, June 12, p 13
Chicago Hardware and Manufacturers' Club. March 27, p 50

Chicago Hardware and Manufacturers Club, March 27, p 50
Chicago machinists, Trouble among, Feb 27, p 9
Chicago Pneumatic Tool Company, Jan 2, p 67; 9, p 15
Absorbs the Standard Company, Feb

27, p 32 Chicago Retail Hardware Association,

Jan 30, p 49; May 1, p 52
Chile trade, May 1, p 57
Chimney, Erection of steel, May 8, p 1
Chinese engineering, June 26, p 18
Chucking machines, Tools used in, Feb 20, p 14

Cigar case, Model porcelain, Jan 2, p 110*

Cincinnati shaper with two independent heads. March 13, p 1*

Cinder car, Tread-kill, May 29, p 14*
Clairton Steel Company, May 22, p 44
Clark, F. L., Address by, June 26, p 51
Clark, L. H., Address by and portrait,
Feb 20, p 60*
Cleaning rod, shell extractor and gun
sight, Marble, March 27, p 62*
Cleveland, H. S., Portrait, March 6, p

Cleveland blast furnace, New, April 17,

Cleveland Cliffs Company and the Negaunee mine, April 10, p 12 Cleveland labor troubles, March 13, p

43 Climber, Swedish Sure Grip, Jan 30, 59*

Clock, Waggoner watchman, March 20, p 12 Clonebough's comments, May 8, p 55

Clothes line prop, June 5, p 73* Clutch, A new friction, Jan 16, p 25* Clyde, W. P., Testimony of, before House Committee, April 17, p 14

Coal: American coal in Germany, Jan 9,

p 7 Mexican mine labor, Jan 30, p 26 Pocahontas field, Jan 9, p 28
Production in 1901, June 12, p 22
Washing of coal, Feb 20, p 2*
Coal centennial celebration, Jan 30, p

39 Coal Commission of Great Britain, Jan

16, p 30 Coal hod, Corrugated, May 29, p 59* Coal miner's strike, May 29, p 21; June

26, p 40

26, p 40
Coal storage plant, Steel and concrete,
June 12, p 8*
Coal tar products, Uses of, June 5, p 69
Coal Tar Products Association, April

17, p 49 Coal trade, Anthracite, of 1901, Jan 2, p 52 Coal vs. oil for fuel purposes, March 6,

p 1 Coaling chute operated by gasoline en-

coaling cinite operated by gasoline engine, April 17, p 7*
Coaling scow, Feb 13, p 7*
Coaling station at Manila, May 29, p

Cockerill variable gear cut off for gas engines, April 24, p 1* Coes, Loring, Anniversary, May 1, p 53*

Coes wrenches, Feb 27, p 73

Coes wrenches, Feb 27, p 73
Coffee grinders:
Cleveland, May 1, p 63*
Ohlo, June 12, p 58*
Oplex, May 8, p 61*
Coffee pot, Pelouze percolator, May 29, p 62*
Coil Clutch Mfg. Company, Jan 23, p 10
Coke furnace at Detroit, April 17, p 3
Coke matters in Illinois, Jan 23, p 15
Coke oven temperatures, May 22, p 8
Cole, H. A., Address by and portrait.

Cole, H. A., Address by and portrait, March 6, p 65*
Cole, J. A., Portrait, Jan 30, p 57*
Cole, W. H., and his Pacific trip, Feb 20, p 75
College man, The, in industrial works,

June 19, p 3 Coleman, W. T., Portrait, June 19, p

76*

Colonial Foundry & Machine Company, June 26, p 42
Colonial Steel Company, March 6, p 15; April 17, p 26; May 29, p 26
Columbian Enameling & Stamping Company, March 20, p 47
Colvin, F. H. Mechanical stokers for locomotives, June 5, p 18*
Commerce, Department of:
Action of National Association of Manufacturers, April 24, p 17
Establishment of, Jan 16, p 16; 23, p 13; March 20, p 24; 27, p 2; April 3, p 8

3, p 8 Competition which upbuilds and bene-

fits, April 3, p 25 Compressed air haulage in mining, Jan

9, p 20
Concrete factory construction, Fire test of, May 8, p 17*
Concrete mixing plant on the New York subway, May 8, p 1*

Concrete walls, Proportions and cost of, Jan 16, p 11 Cone, R. D., Company, Feb 20, p 75 Consolidated Pneumatic Tool Com-pany, Jan 16 p 49

Consolidation: Anti-trust laws must not discrimi-nate, March 20, p 41 Attitude of the State toward, March

6, p 80

Bearing on mercantile interests, March 6, p 79 Beneficial or detrimental to the hard-

Beneficial or detrimental to the hardware jobber, June 19, p 63
Census report on industrial consolidations, Jan 2, p 68
Consolidation and outside competition, Feb 20, p 10
Federal corporation law, Jan 2 p 51
Illinois, Opinion of Judge Tuley, Jan 16, p 30; March 20, p 41
Mercantile consolidations, Probable effects of, June 19, p 73
National corporation act, March 13, p 24

p 24 Publicity and stock companies, Jan 2, p 47

2, p 47
Report of Industrial Commission on trusts, Feb 13, p 4
Trusts and their effect on the business world, April 17, p 22
Trusts in their relation to the retail dealer, March 6, p 65c
Consular reform, Jan 23, p 30

Contracts:

Are they mutually binding as now interpreted? June 19, p 70
Interpretation of contract, May 8, p

Interpretation of contract, May 8, p
57; 22, p 50
Controller for electrically driven machinery, April 10, p 8*
Conveying system at the St. Clair
Works, May 8, p 43
Cook book, Gem Chopper, Feb 13, p 50*
Cooker, Ohio steam, June 5, p 76*
Cooling towers, Alberger, May 1, p 14*
Co-operative buying, Feb 13, p 58
Cope, G. W. The Chicago iron trade in
1901, Jan 2, p 7

Exports, Feb 6, p 26
Fluctuations in prices, Feb 13, p 14
German statistics, April 10, p 15
World's production, June 12, p 27
Copper contract, April 3, p 45
Copper market and Rio Tintos, April

10, p 10 Copper mines of Butte, Labor in, Jan 9, p 30
Copper situation, Jan 2, p 56; April 24,

p 23 Copying lathe, Defiance, May 1, p 7*
"Corbin, The," May 29, p 49
Corbin, Philip, Portrait of, Feb 27, p
55*

Cores and core arbors, June 26, p 8*
Corey, M. L., Address by and portrait,
Feb 27, p 78*; March 27, p 54*;
April 3, p 54*
Cork puller, New Era, June 26, p 70*
Corkscrew, New wire, Jan 16, p 68*
Cormick, H. C., Address by, Feb 27, p

85

Cormick, H. G., Addresses by and portrait, Feb 13, p 54*; 20, p 59*; March 27, p 53*, 55
Corn forks, Perfection, March 20, p 56*
Corn grater, Sayre's, May 15, p 66*
Corn on cob holder, June 5, p 76*
Corn sheller, Advance ball bearing, March 13, p 64*
Cornell, J. C., Portrait, June 19, p 76*
Corporation law, A Federal, Jan 2, p 51
Corundum, Feb 27, p 25; March 20, p 3
Coryell, Miers, Biographical sketch of, May 15, p 9*
Cotton jacket for rubber hose, June 19, p 87*
Countryman, H. M., Portrait, May 8,

Countryman, H. M., Portrait, May 8, p 50*
Couplings:

Davis double compression, Feb ..., p

Shaw compression shaft, Feb 13, p

Cover, Neverslip, March 27, p 60* Covert's Saddlery Works, Feb 6, p 62

Cramp Steel Company, Jan 9, p 3 Crane Company's profit sharing plan, Jan 9, p 27, 31

Crane consolidation, April 17, p 41 Cranes:

Franklin portable, Jan 30, p 9*
Pawling & Harnischfeger electric traveling, Jan 2, p 38*
Crank pin turning machine, Jan 16, p
1*

Cream separator, Surprise, May 15, p

Credits, March 6, p 65b, 89; 13, p 55
Credits and collections, Feb 6, p 59
Disadvantages of the credit business,
May 15, p 57
Proper basis of, June 19, p 65
Crop outlook, May 15, p 24, 26; 22, p
24; 29, p 22; June 12, p 24
Crucible Steel Company of America,
March 20, p 14; June 5, p 39
Cuba, Proposed metal schedule, Feb 6,
p 22

Cuban Proposed metal schedule, Feb 6, p 22
Cuban railroad, March 13, p 53
Cunningham, R. C. Foundry costs,
June 26, p 22
Cupola, Metallurgy of the, June 19, p
15

Cupola blower, Buffalo electric, March 6, p 43

6, p 43
Currency. (See Finance)
Curtis, R. E. A swiveling joint for a
16-inch high pressure steam main,
June 5, p 16*
Cut-off gear, variable, for gas engines,

April 24, p 1*
Cutter cap, Hopkins spring, Jan 9, p
67*

"Daniels, Two, come to judgment,"
April 3, p 4
Darby, Edward, Portrait, April 3, p 59*
Davis double compression coupling, s double compression coupling, Feb 27, p 22*

Decorating sheet steel painted ware by

Decorating sheet steel painted ware by machine methods, Jan 9, p 16*

Deering Harvester Company, Steel plant for. May 1, p 11

Defiance copying lathe, May 1, p 7*

Dehler, George, Jr., Portrait, Mar 6, p 56*

De Laval steam turbine, Jan 9, p 1*

De Laval steam turbine, Jan 9, p 1*
De Motte on writing advertisements,
April 17, p 60*
Department of Commerce, Establishment of, Jan 16, p 16; 23, p 13;
March 20, p 24; 27, p 2; April 3, p 8: 24, p 17
Depreciation, The cost of, March 6, p 6
Depreciation, Maintenance and interest charges, Feb 27, p 44
Diamond in wire drawing, May 29, p 8
Dickerson, Frank, Address by, March

Dickerson, Frank, Address by, March 6, p 79

Diller, H. E. Effect of melting steel with iron in the cupola, June 19, p 27

Dillon-Griswold Wire Company, May

8, p 42
Dinkey, A. C., Testimony on labor bill,
March 6, p 3
Dinner pail ear, May 29, p 58*
Display stand, June 12, p 56*

Dividers:

Dividers:
Adjustable, Jan 2, p 107*
Rex, March 6, p 96*
Docks, Lake ore shipping, May 1, p 13
Dog, Billings & Spencer, May 15, p 18*
Dog collars, Lock buckle, March 13, p
60* 62*

Dome of Chicago government building, June 19, p 1* Dominion Iron & Steel Company, May 15, p 19; 29, p 19 Absorbs the Dominion Coal Company,

June 19, p 26

Door checks: Dime screen, Feb 13, p 72* Rixson, May 1, p 64*

Door hangers: Charm hinge joint, April 3, p 66* Ferris noiseless, March 20, p 55* Fire door hanger, June 26, p 68* Lane hinged, June 19, p 89*
McCabe, May 8, p 61*; 29, p 62*
Reliable, May 8, p 62*
Rex hinge, March 6, p 95*

Door hardware, Corbin, Feb 6, p 63* Dougherty, G. T. Notes on iron an-alysis, May 8, p 14 Doyle Air Burner Company, May 15,

p 8 Drawback:

Cast iron pipe, May 29, p 5; June 5, p 4

Expanded steel lath, Jan 9, p 23 Imported iron ore, March 13, p 26 Lead products, April 10, p 7; June 5, p 35

p 35
Magnitude of the drawback system,
Feb 27, p 50
Reform in the system, Jan 30, p 25;
Feb 20, p 11; April 10, p 4; 17, p
5; May 8, p 20; 22, p 10; 29, p 20;
June 26, p 15
Ship materials, April 10, p 6
Stamped steel cellings, Jan 9, p 12
Steel plates, May 29, p 15
Structural material, June 19, p 27
brawback laws, Amending, Jan 30, p 5

Drawback laws, Amending, Jan 30, p 5
Dreses, Mueller & Co., April 3, p 11
Drill press, Woodward & Rogers',
March 6, p 6*

March 6, p 6*
Drilling machines:
Barr four-spindle, Feb 6, p 24*
Dreses, Mueller & Co., April 3, p 11*
English multiple spindle, June 26, p

Gould & Eberhardt, Feb 27, p 6* Nutting multiple spindle, Feb 27, p

Drills, Yankee automatic, April 3, p 64* Driven wells for fire purposes, April 17, p 11*

Durango Iron & Steel Works, April 17, p 5 Duster and Bellows, Universal, April 17, p 69*

Duty. (See Tariff)

Earle, H. S., Mfg. Company, March 13, p 46 Earll, William, Portrait, Feb 6, p 59*

East Coast Milling Company, Jan 30, p

East St. Louis Retail Hardware Dealers' Association, May 1, p 51
Eastern Bolt & Nut Company, Jan 30,

p 59 Eastern countries, Russia and America in, March 20, p 4 Eastern iron trade, Feb 6, p 28 Eastern New York and Vermont Hard-

ware and Iron' Association, Feb 27, p 54 Eaton, E. A., Portrait, April 10, p 58* Economics of Empire, March 13, p 20 Edgar Thomson furnace record, Jan 9,

Education, Technical vs. Shop, March 20, p 8 Educational wisdom, American, Jan 30,

p 20

Edwards, V. E. The flying shear, June 5, p 7*
Egg beater, Cyclone, Jan 30, p 60*

Egypt, Trade of, March 20, p 50 Eight-hour bill in Congress, Feb 6, p 27; Eight-hour bill in Congress, Feb 6, p 27; 20, p 8; March 6, p 3; 13, p 2; 27, p 23; April 3, p 22; 10, p 2; May 1, p 24; 22, p 42; June 5, p 33; 12, p 6,11; 26, p 15

Eight-hour law for Government work, Jan 16, p 14; 23, p 5

Electric Furnace Company, Jan 16, p

15 Electric furnace with magnetic field, Jan 2, p 42

Electric lamp, Bang, Jan 2, p 39 Electric meter for both direct and alternating currents, June 12, p 15

ternating currents, June 12, p 15
Electric motors:
Direct connected, for elevator operation, April 24, p 15*
Launch, Feb 20, p 22
Northern, Jan 9, p 10*
Stow multispeed, April 3, p 9*
Electric plant, Large, for Chicago, June
5 p 10

5, p 10 Electric welding, Germany, Feb 13, p

Electric welding machine for range boilers. Wood, Jan 2, p 24*

Electrically heated devices, April 17, p

Electricity in cotton mills, June 5, p 28 Electricity in iron works, May 15, p 16 Electricity, Progress in 1901, Jan 9, p 20

Electro-chemical industries at Niagara

Falls, April 3, p 19

Elevator operated by direct connected electric motor, April 24, p 15

Ellis, F. H., Portrait, April 10, p 61*

Elmira Rolling Mill Company, March

Emira Rolling Mill Company, March 20, p 26

Emery, H. F., Address by and portrait, Feb 20, p 70*; 27, p 70*

Emery grinders:
Gem shop, Feb 6, p 62*
Hero, April 3, p 63*; 17, p 68*

Emery wheel dressers:

Culver, April 10, p 15*
Ramsom, Jan 9, p 22*
Empire Steel & Iron Company, Financial statement, March 6, p 44
Enameled ware in England, March 6,

p 53

Engine Builders' Association of the U. S., May 8, p 27; 29, p 17 Engine tests, Methods of making, June 5, p 24

Engineering trade, British, Agreement in, March 6, p 31

Engines: Bayley high speed engine, Jan 2, p 50* Binary vapor engine, March 6, p 26
Buffalo engine, with direct connected
generators, Jan 16, p 17*
Heisler high duty pumping, May 1, p

10* Mietz & Weiss direct connected kero-

sene engine, March 6, p 14*
Reconstructing compound engines,
Chicago, Jan 23, p 17
Secor oil engines, Jan 9, p 5*
Superheated steam economics, April

24, p 25 (See also Gas engines)

Epright machine for making boller stays, April 17, p 1* Eshleman, B. F., Portrait, June 26, p

Exhibition, Düsseldorf industrial, Jan 2, p 42 Expanded steel lath, Drawback in, Jan 9, p 23 Export Club of America, June 19, p 79

Export trade: American competition in neutral mar-

kets, June 12, p 25; 19, p 32 Australia, Jan 2, p 80 Chile and American hardware, Jan 30,

n 52 Comments on foreign commerce of the

U. S., Feb 27, p 27
Copper, Feb 6, p 26
Freight rates and the export trade,
March 13, p 25
Goods diverted to the home market, Jan 9, p 59 Great Britain, Jan 23, p 26

Hardware sent to England, Jan 30, p 51

Introducing American goods abroad,

Feb 13, p 48 Iron and steel in 1901, Jan 30, p 40; April 3, p 27

Iron and steel, during first quarter of 1902, May 1, p 23 London view of export business, May

London view of export business, May 8, p 54
Machinery in 1901, Jan 30, p 40
Mediterranean countries, Jan 2, p 82
Metals in 1901, Jan 30, p 40
South America, Jan 2, p 81
Steel rails, Feb 6, p 26
Turkey, Increasing trade with, Jan 16, p 61
Eye bar machine built by the Bethlehem Steel Company, Jan 16, p 15*

Fakes and fakirs, or leg pulling, Feb 27, p 69

Fan, Large, for mechanical draft. Jan

23, p 17*
Farless, J. A., Portrait, Feb 20, p 75*
Farwell molding machine, March 20, p 13*; May 29, p 11*

Fastener, Tannewitz, June 5, p 75*

Fastener, Tannewitz, June 5, p 75*
Federal Boiler & Supply Company, Jan
16, p 11
Federal corporation law, Jan 2, p 51
Feed bag, Perfect, June 26, p 67*
Feed water and air heater, Keller combined, May 22, p 13*
Feed water for steam boilers, March
27, p 6

27, p 6

Fences:

Diamond mesh coiled spring, June 5, p 73*

Graduated diamond mesh, June 26, p 70*

p 70*
World's Fair, March 20, p 54*
Fenn-Sadler bench lathe, May 1, p 19*
Fernley, T. J., Addresses by and portrait, Feb 20, p 54a*; March 6, p 57; April 3, p 56*
Ferracute stamping press, Jan 16, p

20*

Field, H. E. The metallurgy of the cupola, June 19, p 15
Filter, Champion germ proof, March 27, p 61*

Finance: Bank circulation, Contraction of, Jan

Bank circulation, Contraction of, Jan 23, p 27
Currency bill, March 13, p 24; April 24, p 23; May 15, p 24
Bankruptcy law, Proposed amendments, May 1, p 20; 8, p 3
Banks, Small national, Jan 2, p 55
Changes in circulation, May 29, p 22
Emergency bank currency, March 27, p 25

Foreign trade balance, Jan 9, p 29

Foreign trade balance, Jan 9, p 29
Fowler banking bill, Amendments to,
April 10, p 18
Reducing the revenue, Feb 13, p 24
Small national banks, Jan 2, p 55
Finishing connecting rod brass without
special gang cutters, Jan 2, p 40*
Fireproof window, Biersach, Feb 6, p 9

Fire protection from driven wells. April 17, p 11* test of concrete factory construc-

tion, May 8, p 17*
Fire at Springfield, Ohio, Feb 13, p 17
Fish knife, Marble, April 3, p 66*
Fishing tackle assortment, Feb 6, p 66*

Fishing tackle assortment, Feb 6, p 66*
Flather, Edward, Biographical sketch
of, June 12, p 26*
Floor oiler, Remlik, Feb 20, p 79
Fluctuations in the prices of iron and
steel, Jan 23, p 22, Sup.
Fluctuations in the prices of metals
since 1890, Feb 13, p 14, Sup.
Flue stops, Clark gem, April 10, p 66*
Food chappers:

Food choppers:
Classic, May 8, p 63*
Gem, with nut butter cutter, Feb 20, p 80*

Rollman, Feb 20, p 80* Russwin, March 20, p 56*

Foreign trade balance Jan 9, p. 29

Russwin, March 20, p. 50

Foreign commerce. (See Export trade) Foreign commerce. (See Export trade)
Foreign trade balance, Jan 9, p 29
Forge, Buffalo improved, Jan 2, p 49*
Forter-Miller Engineering Company,
April 17, p 17
Foundry, Melting loss in the cupola,
March 6, p 33
Foundry costs, March 6, p 33; June 26,
p 22
Foundry economy, March 20, p 4
Foundry iron, Threatened famine in,
Feb 20, p 28
Foundry practice, Advance in, June 26,
p 13
Foundry production, Methods of in-

Foundry production, Methods of increasing, June 19, p 18
Foundry and mill iron consumption,
Feb 6, p 30

Fowler banking bill amendments, April

10, p 18

Fox, W. H., Biographical sketch of,
March 6, p 68*

Fox Machine Company, May 8, p 7

France:

h

n

p

Iron and steel production, April 10, p 15

France (continued):

Reciprocity treaty, April 24, p 10 Franklin gasoline engine, May 8, p 7* Franklin Institute and the metric system, Feb 13, p 3 Franklin milling machine, March 20, p

114

Franklin portable crane, Jan 30, p 9*
Freight discrimination, April 17, p 26
Freight rates and the export trade,
March 13, p 25
Freights and the railroads, Jan 2, p 55
Frick building in Pittsburgh, Jan 9, p

Frier, Taylor:
Association loyalty, Feb 20, p 52
Portrait, Feb 27, p 84*
Frye, J. F., Portrait, April 3, p 52*
Fuel. (See Coal; Oil.)

Fuel. (See Coar; Oh.)
Fuel briquetting industry in the United States, June 19, p 19
Fueling scow, Bartlett, Feb 13, p 7*
Fulton, J. L., Portrait, Feb 27, p 78*
Fusible plugs, Lunkenheimer, May 15, p 12*

G.

Gage glass box, May 29, p 49*
Gallup, O. A., Address by and portrait,
Feb 20, p 71*
Gang slitting machine with flattening
rolls and winder, June 26, p 13*

Garden cultivators, Diamond, Feb 6, p

63* Garland, Robert, Portrait, June 19, p 70*

Gas engine igniter, Holtzer-Cabot, May

1, p 11
Gas engine test, Working details for,
June 5, p 27

engines:

Gas engines:
Brighton gas and gasoline engine,
Jan 30, p 17*
Franklin four-cylinder gasoline, May
8, p 7*
Variable cut off gear, April 24, p 1*
Wabash gasoline, April 10, p 3*
Gas producers, Improved blowers for,
March 6, p 18*
Gasoline burner, Turner, May 29, p 61*

Gauges: Automatic micrometer gauges, Jan 23, p 62* Blodgett machinist's, Jan 2, p 108*

Bristol recording, April 17, p 17* Gauges for screws, June 12, p 18

Gayley laboratory, April 17, p 6
Gear cutter, Twining automatic, April
3, p 16*
General Electric Company absorbs
Sprague Company, May 29, p 27
General Fire Proofing Company, Feb

20, p 32
Generating set, Marine, March 20, p 3
George, John, & Sons, London, March
27, p 58

German blooming mill, May 22, p 15* German pig iron syndicates, Feb 13, p

German steel works, List of, March 20, p 39

German trade, Domestic and foreign, Report of Consul-General Mason, Feb 13, p 25

Germany:
Buyers' syndicates, Feb 13, p 26
Comparison of British and German
trade, May 1, p 4
Copper statistics, April 10, p 15
Export premiums in the German iron

Export premiums in the German iron trade, May 29, p 21
Iron industry in 1901, Jan 16, p 21
Iron syndicates and the industrial crisis, Feb 20, p 24
Kaiser a business emperor, May 1, p 4
Pig iron consumption, March 6, p 43
Sheet iron syndicate, April 3, p 10
Trade in the colonies, June 5, p 20
Gibson, F. B., Portrait, Feb 6, p 57*
Gilfillan, S. G., Address by and portrait,
June 19, p 62*

June 19, p 62*
Gilmour, E. B. Cores and core arbors,
June 26, p 8*
Gold of Ophir, April 10, p 11
Goodrich, C. L. Camming automatic

rich, C. L. Camming automatic screw machines, Feb 20, p 16*

Gormley, W. T., Address by and portrait, Feb 20, p 63*
Gould & Eberhardt vertical drill, Feb 27, p 6*
Gracey, Henry, Portrait, April 10, p 57*

Grain elevator, concrete, April 3, p 12*
Grand Crossing Tack Company, Steel
mill for, March 13, p 1
Graphite as a lubricant, May 8, p 16
Gray, G. M., Address by and portrait,
Feb 27, p 61*
Great Britain:

American structural works in the

American structural works in the colonies, Jan 9, p 3 Arms and ammunition trade, Feb 27,

p 56 p 56 Hematite Steel Company, Barrow Feb 13, p 16; March 27, p 20; April 3, p 17

3, p 17
Coal commission, Jan 16, p 30
Comparison of British and Germantrade, May 1, p 4
Copper market and Rio Tintos, April

10, p 10 Enameled ware in England, March

6, p 53 Export trade, Jan 23, p 26; May 8, p

54 Hardware and metal market, Feb 27,

p 57

Hardware trade, Jan 23, p 52; 30, p 51, 53; Feb 13, p 47; March 27, p 57; April 17, p 50; 24, p 59; May 15, p 48; 29, p 55; June 5, p 62; 12, p 50

Imported steel billets, May 1, p 17 Industrial prospects after the war, June 19, p 23 Iron and steel trade, Jan 23, p 24; 30,

p 16

London exports to South Africa, June 19, p 79 Metal imports from America and Germany, May 22, p 59 Metal trade with France, April 17, p

Naval contracts, April 17, p 15
Notes on trade, Jan 9, p 57; 16, p 22; 23, p 24; 30, p 16; Feb 13, p 16; 27, p 10; March 6, p 53; 13, p 15, 52; 20, p 49; 27, p 20, 57; April 3, p 16, 57; 10, p 10; 17, p 15; 24, p 59; May 1, p 16, 57; 8, p 12, 54; 15, p 21, 48; 22, p 22, 59; 29, p 16, 55; June 5, p 20, 62; 12, p 4, 50; 19, p 23, 79; 26, p 60
Pre-eminence on the sea, April 3, p 24
Protective tariff on imported goods, April 3, p 26
Railway rolling stock combine, April 17, p 15; May 1, p 16
Science and politics of commerce, May 15, p 21
Sheffield exports to America, April

Sheffield exports to America, April 17, p 50
Shipbuilding industry, Jan 23, p 25;
Feb 27, p 12; May 22, p 22
Steel consolidation proposed, Jan 23,

p 46 Structural steel in Great Britain,

June 5, p 20
Trade with colonies, March 13, p 20
Great Lakes Engineering Works, June 12, p 22
Grinder, Knife and tool, May 29, p 60*
Grinding machines:
Belt driven wet drill grinder, Jan 2,

p 49

Chapman, May 22, p 64*
Chicago dry grinder, May 29, p 15
Heald motor and friction driven
grinders, Feb 20, p 1*
Hibbard reversible, Feb 6, p 1*

Hisey electrically driven grinder, Feb

20, p 10* Vulcan motor driven

vuican motor driven water tool grinder, March 6, p 10* Guenther, A. B. Window display, Jan 23, p 59*

Gun sling, Rumsey. April 10, p 65* Gun cleaner, Stevens, May 22, p 67*

Gathmann, Feb 6, p 26 Iver Johnson, June 19, p 90* Single barrel saluting, May 8, p 60*

Guns (continued):

Stevens Single hammerless, April 10, p 65*

Gurney Refrigerator Company, Feb 13, p 59

Gutman, G. A., Portrait, April 10, p 56*

Hackensack meadows for industrial purposes, March 13, p 32 Hall, H. J., Portrait, June 19, p 76* Ham rotary shears, Feb 6, p 26*

Hammers:

Copper tipped hammer, May 22, p 66* Double frame steel hammer, Feb 6, p 7* Drop hammers, Feb 13, p 32

New post hammer, Jan 2, p 48* Steam, New double frame, Feb 6, p

Hand cart, Butler steel, April 17, p 65* Handles:

iron, March 13, p 63* Sad

Sad iron, March 13, p 63*
Wash boiler, March 6, p 95*
Hansen, John M., Serious charge
against, May 8, p 6
Hanson, L. B., Address by and portrait,
Feb 20, p 71*
Harbison-Walker Refractories Company, June 19, p 28
Hardware Association maps, March 13,
p 50*
Hardware Associations:

Hardware Associations: Benefits of organization, March 6, p

65, 65a.
List of, Jan 9, p 55
(See also their names)
Hardware don'ts, Feb 27, p 63
Hardware jobbers. (See Jobbers.)
Hardware merchants:

Art of selling, Feb 27, p 76 Attitude toward jobbers, Feb 27, p 81 Benefits of organization, March 6, p 65, 65a

Care, management and display of retail hardware, Feb 6, p 60c
Difficulties of merchants, Feb 20, p

Don'ts, Feb 27, p 63 January work, Jan 2, p 92 Jobbers. (See Jobbers.)

Mental equanimity, Feb 13, p 56 Necessity of organization, April 3, p 53

Practical hardwareman, Feb 20, p 71 Relations of traveling men to retail-

Relations of traveling men to retailers, Feb 13, p 64
Retailers' trade with manufacturers,
May 15, p 57
Should join State association, March
6, p 59
Social side of business life, Feb 6, p

58 Trusts and the retail dealer, March

Trusts and the retail dealer, March 6, p 65c (See also Advertising; Business methods; Window display)
Hardware trade, Jan 2, p 71; 9, p 52; 16, p 53; 23, p 47; 30, p 45; Feb 6, p 50; 13, p 43; 20, p 46; 27, p 51; March 6, p 48; 13, p 44; 20, p 43; 27, p 47; April 3, p 46; 10, p 38; 17, p 44; 24, p 46; May 1, p 47; 8, p 45; 15, p 44; 22, p 47; 29, p 45; June 5, p 56; 12, p 43; 19, p 51; 26, p 45

p 45 Address by J. W. Black, Feb 20, p 76 Advantages of associated effort, Feb 6, p 60g

o, p oug Australia, Feb 6, p 60c California, Feb 6, p 61 Chicago, in 1901, Jan 2, p 90 Chile, Jan 30, p 52

Competition in trade, March 6, p 60,

Co-operative buying, Feb 13, p 58 Co-operative buying, Feb 13, p 58
Credits and collections, Feb 6, p 59
Dealers' associations, Feb 20, p 72
Development of local jobbing houses,
March 20, p 51
Evolution of the hardware business,
Feb 20, p 51
Future hardware trade, Feb 20, p 57
Great Britain, Jan 23, p 52; 30, p 51,
53; Feb 13, p 47; March 20, p 49;
27, p 57; April 17, p 50; 24, p 59;

Hardware trade (continued):

Hardware trade (continued):

May 15, p 48; 29, p 55; June 5, p 62; 12, p 50

Hawaiian Islands, Jan 23, p 54

Illegitimate competition, Feb 27, p 80

Important things in conducting a hardware business, June 26, p 57

India, March 20, p 49

Introducing builders' hardware abroad, Jan 9, p 58; 16, p 59

Local associations, Feb 20, p 60

Manufacturer, jobber and retailer, March 6, p 88

Outlook for 1902, Jan 2, p 94

Progress, April 3, p 55

Outlook for 1902, Jan 2, p 94
Progress, April 3, p 55
Reciprocity in trade, Feb 13, p 68
Review of 1901, Jan 2, p 71, 85
Scotland and Ireland, Jan 16, p 59
South Africa, Jan 16, p 60
Switzerland, Jan 30, p 52
Working the architect, Jan 16, p 59
Harrington & Richardson Arms Company, Jan 2, p 106
Harrow, Umbach, Feb 27, p 90*
Hartley, Marcellus, Obituary and portrait, Jan 16, p 62*; 23, p 57
Hawaiian Islands, Hardware interests in, Jan 23, p 54
Hays, W. H., Portrait, June 19, p 71*
Heald motor and friction driven grinders, Feb 20, p 1*
Heat, Generation of intense, through the combustion of aluminum, May

Heat, Generation of intense, the combustion of aluminum, May

22, p 17 Heat treatment of steel, Jan 30, p 12* Heels, Rubber, June 19, p 86*
Heick, Henry, Portrait, March 6, p 58*
Heitmann, F. A. Address by and portrait, June 19, p 56*
Helgesen, H. T., Address by and portrait, Feb 27, p 68*

Hessel, John, Address by and portrait, Feb 6, p 60b* Hibbard, Spencer, Bartlett & Co., New plant, May 8, p 58*

plant, May 8, p 58*
Hibbard reversible grinding machine,
Feb 6, p 1*
Hill, J. J., on the Mesaba range, Feb
6, p 8
Hinge, Shelby floor, April 3, p 65*
Hisey electrically driven grinder. Feb

Hinge, Shelby floor, April 3, p 65*
Hisey electrically driven grinder, Feb
20, p 10*
Hobson, Thomas. The Eastern iron
markets, Jan 2, p 43
Hoe, hill and drill seeder, Iron Age,
March 6, p 95*
Hoefer rotary wire straightening and
cutting machine, Jan 2, p 42*
Hollowell, W. D., Portrait, May 8, p
48* Hollowell, 48*

Holtzer-Cabot gas engine igniter, May 1, p 11

Hooks:

Anti-friction, Feb 13, p 72* Brass cup and screw, April 24, p 63* Keystone shackle hook, Jan 2, p 108* Hoops, Wire, June 26, p 69* Horseshoes:

Removable steel cork, June 19, p 88* Table of prices of, Jan 16, p 64

Hose, Metal, Jan 23, p 22*

Hose reel, Dubnar, April 17, p 65*

Howard Axle Works, May 22, p 41

Howard & Morse, New York, April 10, p 41; June 5, p 69

Howery Mfg. Company, Chester, Pa., June 12, p 13

Hudson River tunnel, March 13, p 28 Hull, H. D.: Fiftieth anniversary, May 29, p 51 Portrait, May 8, p 48* Hunt, R. W., the first iron works chemist, Feb 13, p 26

Ice breaker, Rapid, May 29, p 60*
Ice chipper, Lightning, May 22, p 65*
Idaho Hardware Dealers' Credit Association, April 3, p 50
Illinois Hardware Association map,
March 13, p 50*
Illinois implement industry, April 17,

Illinois Retail Hardware Dealers' Association, Jan 16, p 58; Feb 13, p 54; 20, p 56 Immigration heavily increasing, June

19, p 32 Imports of iron and steel, May 1, p 24 Incandescent lamp, Hylo, April 17, p

Independent sheet mill meeting, Feb 20, p 43

Index systems, June 5, p 29 India:

American traders in, Feb 27, p 56 Hardware trade, March 20, p 49 Iron and steel in, Feb 27, p 11 Indian Territory Retail Hardware, Im-

plement and Vehicle Association, May 29, p 50 Indiana Retail Hardware Dealers' As-sociation, Feb 13, p 46; 20, p 54; 27,

p 74 Industrial Association, England, March 20, p 11*
Industrial Commission's report, Feb 13,

p 4; 20, p 26 Industrial consolidations, Census re-

port on, Jan 2, p 68
Industrial railway of Carpenter Steel
Company, Feb 20, p 25
Industrial securities, Danger of continued flotations, June 19, p 31
Inland Steel Company, Jan 23, p 5

Insurance:

Report at Minnesota Retail Hardware

Association, March 6, p 87
Report at Ohio Hardware Association, March 6, p 70
International Nickel Company, April 3,

p 45 International Power Company, Financial statement, May 29, p 26
Interstate commerce, Definition of, Jan

2. p 51

Iowa Retail Hardware Dealers' Association, Jan 23, p 56; March 6, p 63; 13, p 54

Estimation of sulphur in iron, Feb 27, p 7

Manganese in iron and steel, May 8, p 15

Pig iron, Proper valuation of,

foundry purposes, June 26, p 25
Puddled iron, May 29, p 1*
Sampling methods, Report on, June 19, p 35
Tests of cast iron, Methods, June 26,

p 3 Iron Age:

As the national window display, Jan

Iron and metal trades, Jan 2, p 65; 9, p 39; 16, p 41; 23, p 24; 30, p 32; Feb 6, p 37; 13, p 33; 20, p 36; 27, p 37; March 6, p 36; 13, p 33; 20, p 31; 27, p 33; April 3, p 33; 10, p 26; 17, p 34; 24, p 33; May 1, p 32; 8, p 33; 15, p 33; 22, p 33; 29, p 31; June 5, p 40; 12, p 32; 19, p 41; 26, p 33

Iron and Steel Institute, April 24, p 5
Iron and steel plants:

Iron and Steel Institute, April 24, p 5
Iron and steel plants:
Belgium, Jan 16, p 29
Foreign visitors and American practice, Jan 16, p 36
Modern, for the manufacture of hoops
and merchant bars. Jan 16, p 6*

and merchant bars, Jan 16, p 64

Works of United States, Capacity of, March 6, p 17 Iron and steel sections, Standardization of, Feb 6, p 28

Iron mines, Sunrise, in Wyoming, Feb 6, p 19*

Iron pigment, A new, Feb 6, p 21; April 10, p 13 production:

capacity decreased, Blast furnace

March 13, p 29
Canadian pig iron, March 6, p 25
Decline in pig iron, Jan 16, p 37
Enormous consumption of pig iron, Feb 13, p 31 Foundry and mill iron consumption,

Foundry and mill iron consumption, Feb 6, p 30
France, April 10, p 15
Lake district, Jan 2, p 46; 9, p 12; 16, p 18; 23, p 16; 30, p 23; Feb 6, p 8; 18, p 15; 20, p 19; 27, p 26; March 6, p 23; 13, p 19; 20, p 18; 27, p 11; April 10, p 12; 17, p 21; May 1, p 2; 8, p 4; 29, p 6; June 5, p 33; 12, p 15; 19, p 2; 26, p 14
Lake iron, ore developments, May 15, p 10

p 10
Lake from ore developments, May 15, p 10
Lake Superior region, Report of C. R. Van Hise, Jan 23, p 12
Lower grade ores on the lake ranges, June 5, p 31
Mesaba range, Jan 2, p 60; 16, p 18; 30, p 23; Feb 6, p 8; March 13, p 19

19

Mines of Southeastern New York, Jan 2. p 58

Pig iron in 1901, Jan 30, p 41; Feb 6, p 6, 30

Pig iron production by grades, June 26, p 24 Pig iron production increasing, May 15, p 28

Pig iron production temporarily reduced, June 12, p 28
Pig iron vs. scrap, March 20, p 26
Report by John Birkinbine, May 15, p 17
Shorters in pig iron, Ech 27, p 5

Shortage in pig iron, Feb 27, p 5 Statistics for 1901, April 3, p 12 Swank's report, Jan 30, p 41; Feb 6, p 6, 30; June 26, p 18 Texas resources, April 17, p 8

Threatened famine in foundry iron, Feb 20, p 28

World's production. Jan 9, p 27

World's production, Jan 9, p 27
Iron trade:
Alexis W. Thompson on the iron situation, March 6, p 11
American and British iron markets,
March 6, p 16
Chicago trade in 1901, Jan 2, 7
Eastern iron markets in 1901, Jan 2,
p 43

p 43

p 43
English trade, German estimate of,
Jan 16, p 34
Exports and imports, April 3, p 37;
May 1, p 24
Fluctuation in prices, Jan 23, p 22,
Sun

Sup. Future of the Eastern trade, Feb 6. p 28

Germany, 1901, Jan 16, p 21; June 5, p 17 Great Britain, Jan 23, p 24; 30, p 16;

March 13, p 15 Independent lake ore mines, June 12, p 23

Pig iron imports from Russia, March

6, p 16
Lake Superior traffic, June 12, p 27
Pittsburgh, 1901, Jan 2, p 30
Prices, Jan 2, p 9
Prices not advanced, Feb 6, p 30
Protracted activity in the trade, Ja

Protracted activity in the trade, Jan

Protracted activity in the 2, p 54
Scotland, Jan 2, p 27; 30, p 14; March 20, p 19; April 10, p 14
Seven months of extraordinary activity, May 8, p 26
Willis, F. B., Address by, March 6, p

Iron works chemist, The first, Feb 13,

p 26; 20, p 29
Ironing attachment, June 26, p 68*
Irwin, W. G. Fuel briquetting industry in the United States, June 19, p 19 Italy, Iron industry of, April 17, p 6

Samson malleable iron, May 22, p 66* Time saving stone, June 26, p 70*

American trade with Japan, June 5,

Shipbuilding in, April 17, p 15 Jar holder, T. & B., June 5, p 74* Jefferson pipe union, Feb 20, p 15* Jewell, C. W., Address by, March 6, p

Jobbers and hardware dealers, Feb 27, p 81

Jobbers' catalogues and the manufac-turers, Feb 27, p 58, 67

turers, Feb 27, p 58, 67
Jobbers' consolidation, April 10, p 42;
17, p 51; 24, p 51; May 8, p 51; 15,
p 47; 22, p 51; June 5, p 61, 64; 19,
p 78; 26, p 56
Jobbers' special brands, June 12, p 45
Joint. (See Pipe joint)
Jones, A. S., Address by, June 26, p 52
Jones, W. C., Portrait, Feb 27, p 62*;
March 6, p 72*
Jones & Laughlin Steel Company, May

Jones & Laughlin Steel Company, May 15, p 29 Jones mixer patent decision, May 22,

p 7 Joy, H. N., Portrait, Feb 27, p 68*

Kansas, Peddlers' license in, Jan 30, p 58

Kansas Retail Hardware Dealers' Association, Jan 30, p 57 Kansteiner, F. A., Portrait, Feb 27, p

861

Kansteiner, William. Evolution of the hardware business, Feb 20, p 51
Keating, C. R., Address by and portrait, March 6, p 65a*; 13, p 58*
Keating, W. H., Portrait, March 6, p 65*; 13, p 56*

Keating, W. H., Pott 6, p 62*

Kegs, Steel shop, Feb 6, p 62* Keller feed water and air heater, May

22, p 13*
Kentucky Retail Hardware and Stove Dealers' Association, March 6, p 55

Kilbourne, James, Address by, March 6, p 76
King, E. I., Portrait, Jan 30, p 57*
Kingsley boiler, Feb 13, p 20*
Kirchhoff, Charles. The trusts and their effect on the business world,

April 17, p 22
Knife sharpener, Elyria, June 26, p 67*
Knight, Henry, Anniversary and portrait, April 3, p 59* Knives:

Charter Oak, May 15, p 65*
Charter Oak, May 22, p 66*
Fisherman's knife, May 9, p 58*
Goodell orange, May 29, p 62* Goodell orange, May 29, p 62*
Yacht and Canoe knife, June 12, p 59*
Knob, Enameled repair, April 10, p 64*
Korb, S. B., Address by, March 6, p 59
Kornely, J., Portrait, Feb 13, p 65*
Kretsinger, F. S., Address by and portrait, June 19, p 70*
Kurtz, L. H., Portrait, March 13, p 57*

Labor: Americans push work in England, Jan 23, p 14

Associations of free workmen, Jan 30, p 27

British engineering trade, Agreement in, March 6, p 31 British labor in America, Feb 27, p 30 Business and philanthropy, Jan 30, p

27 Business outlook and labor, March 20, p 25; April 10, p 19 Cleveland troubles, March 13, p 43 Discussion of labor question, May 29,

p 23

Eight-hour bill in Congress, Feb 6, 27; 20, p 8; March 6, p 3; 13, p 2; 27, p 23; April 3, p 22; 10, p 2; May 1, p 24; 22, p 42; June 5, p 33; 12, p 6, 11; 26, p 15

Eight-hour day in the Valleys, Feb 27, p 16

27, p 16
Eight-hour law for government work,
Jan 16, p 14; 23, p 5

Labor (continued):

Abor (continued):
English criticism of American machinists, April 3, p 4
English trade unionism and the metal trades, Jan 23, p 53
English trade unions and the brass trade, Jan 2, p 41
English trades union and American managers, Jan 9, p 31
Labor in America from the standpoint of an English unionist, Feb 13, p 18

n 18

Millionaire and the worker in America, Jan 16, p 12 nsion department of American Steel & Wire Company, Jan 9, p Pension

31; 16, p 51 of Philadelphia Pension system

Reading Railway, May 29, p 19
Present aspect of the labor question,
by E. P. Watson, Jan 2, p 22
Profit sharing plan of the Crane Company, Jan 9, p 27, 31
Profits divided among employees, Feb

Relative intelligence of English and
American labor, Feb 13, p 12
Wage increase, Allis-Chalmers Company, March 20, p 23
Labor organizations attempt too much,

Labor organizations attempt too much, April 17, p 25
Lackawanna Iron & Steel Company, Feb 20, p 43; May 22, p 44
Buys mining property, Jan 2, p 69
Plant on Lake Erie, Jan 9, p 51
Lake, W. F. The college man in industrial works, June 19, p 3
Lake steamship earnings, May 8, p 8
Lake Superior, Iron manufacture on, Jan 2, p 50
Lake Superior Mining Institute, March 6, p 23

6, p 23 Lake Superior mining interests, Feb 13,

p 15 Lake Superior ore region, Report of C.

R. Van Hise, Jan 23, p 12
Lambert curved pipe molding machine,
April 24, p 12*
Lamp bracket, Utility, Jan 16, p 66*

Lamps:
Doorenbos gas arc, Feb 6, p 62
Nernst lamp, May 29, p 1*
Northall direct current, March 27, p

12*

Nulite arc illuminator, Feb 27, p 89* Stay-Lit, May 22, p 68* Lang Cutlery Works, Jan 23, p 58 Lantern, Rival tin tubular, March 20, p 58*

Latches:

Petersen barn door, March 13, p 64* Spring latch, May 22, p 67* Lathe and planer guides, June 26, p 23*

Lathes:
Automatic threading, May 1, p 1*
Defiance copying lathe, May 1, p 7*
Fenn-Sadler bench lathe, May 1, p 19*
Pittsburgh, Jan 23, p 14*
Launch, Electric motor, Feb 20, p 22
Law, Technical suits at, March 6, p 9;
March 13, p 27
Lawn mower grinders:

Lawn mower grinders:
Easy, June 19, p 88*
Schofield, April 24, p 64*
Lawn mower sharpener, Acme, June
26, p 66*

26, p 66*
Lown mowers:
Elwood ball bearing, March 6, p 96*
O. K., June 12, p 60*
Lawn sprinklers:
New Century, April 3, p 64*
Stearns, Feb 13, p 71*
Lawson, C. K., Portrait, June 19, p 76*
Le Blond arbor press, March 20, p 9*
Lead, Fluctuations in prices, Feb 13, p

14
Lead ore, Drawback on, June 5, p 35
Lead pipe consolidation, May 29, p 40
Lehigh Valley changes, Jan 16, p 51
Lemon squeezer, Sterling and American, Feb 20, p 81*
Letchworth, O. P., Dinner of welcome,
June 19, p 25
Letters from the trade, Jan 9, p 59; 16,
p 58; 23, p 51; Feb 13, p 49; 27, p
55; May 8, p 57; 15, p 57
Level, Pocket, April 17, p 66*

Lewis, W. P., Address by and portrait, Feb 20, p 54*; 27, p 75*; March 6, p 77b

6, p 77b
Lien laws, Reports on, Feb 27, p 62;
March 6, p 70, 72
Lima and National Steel Casting companies consolidate, April 17, p 24
Lindenburg, L., Address by and portrait, March 6, p 67*; 13, p 59*
Lincoln miller, April 17, p 13*
Lindsay reversing gear for rolling mills, Jan 23, p 10*
Liquid fuel. (See Oil fuel)
Local hardware associations, Feb 20.

Local hardware associations, Feb 20,

p 77

Locker, Sanitary wire, April 3, p 65* Locking bar pipe, Ferguson, Jan 23, p 6*

Locomotive development and Mathias Baldwin, Feb 20, p 26 Locomotives:

American, British and Belgian locomotives compared, April 24, p 6
Mechanical stokers, June 5, p 18*
The differentiation of the American,
March 6, p 29
Water tube boiler, England, March

Water tube boiler, England, March 27, p 21

Lott, G. R., Portrait, Feb 13, p 55*

Lovering bill in Congress, Feb 20, p 11;

April 10, p 4; 17, p 5; May 8, p 20;

22, p 10; 29, p 20; June 26, p 15

Lugs, Sure Grip, March 20, p 56*

Luhrig process of washing coal, Feb 20, p 2*

Lunch box, Twentieth Century, May 1, p 62*

p 62*

Lunkenheimer fusible plugs, May 15, p 12*

D 12*
Lupton, H. B., Address by and portrait,
March 6, p 81; June 19, p 71*
Lyon, P. W., Address by and portrait,
March 6, p 88*

Machine methods, Modern, Feb 6, p 31; 20, p 12; 27, p 16

Machine screw thread sizes, A proposed standard for, June 12, p 17

Machine tool bids, Jan 23, p 44; April 10, p 21; May 29, p 41

Machine tools, Small vs. large appliances, June 19, p 31

Machinery market, Jan 2, p 66; 9, p 46;

ances, June 19, p 31

Machinery market, Jan 2, p 66; 9, p 46;
16, p 50; 23, p 41; 30, p 42; Feb 6,
p 44; 13, p 40; 20, p 44; 27, p 46;
March 6, p 46; 13, p 42; 20, p 40;
27, p 42; April 3, p 42; 10, p 35;
17, p 42; 24, p 41; May 1, p 41; 8;
p 41; 15, p 41; 22, p 41; 29, p 40;
June 5, p 50; 12, p 39; 19, p 50;
26, p 41

Machinery trade of 1901, Jan 2, p 19, 21

Machinists, English criticism of American, April 3, p 4

Machinists' tools, Armstrong, March 6,
p 43

p 43

Maggini, B. I., Portrait, April 3, p 52* Magnetic clutch applied to planer, Feb

20, p 13*

Magnetic separator, Barnard & Leas,
May 22, p 9*

Mall box, Bates-Hawley, March 13, p

63*

Maintenance, depreciation and interest charges, Feb 27, p 44 Malin, J. L., Address by and portrait, March 6, p 59*

Maloney, Thomas, Portrait, May 8, p

Manhattan Railway power station,
March 13, p 6*
Mann, Robert, Biographical sketch of,
May 29, p 49*
Mannesmann Cycle Tube Works sold,
April 3, p 7
Manufacturers' agent and the jobber,
June 26, p 52
Manufacturers' associations and their
relations to the hardware jobbing

Manufacturers' associations and their relations to the hardware jobbing trade, June 19, p 59

Manufactures and the struggle for the world's markets, Feb 27, p 30

Manufacturing, Jan 2, p 62; 9, p 36; 16, p 38; 23, p 31; 30, p 29; Feb 6, p 34; 13, p 29; 20, p 33; 27, p 33;

Manufacturing (continued):

March 6, p 33; 13, p 30; 20, p 27; 27, p 29; April 3, p 30; 10, p 22; 17, p 31; 24, p 30; May 1, p 29; 8, p 29; 15, p 29; 22, p 29; 29, p 27; June 5, p 36; 12, p 29; 19, p 38; 26, p 29

Maps, Hardware Association, March 13, p 50*

Marietta sheet steel and tin plate plant.

Feb 20, p 29

Marine generating set, Holtzer-Cabot,
March 20, p 3

Mariette Iron Works Mfg. Company,
May 8, p 25

May 8, p 25
Market phenomenon, A, Feb 6, p 30
Marking goods, June 26, p 59
Martin, Cyrus B., Biographical sketch
of, April 17, p 57*
Masher, Vegetable and fruit, June 5,
p 75*

Mason, Frank H., Report on German trade, Feb 13, p 25 Matthai, W. H. The effect of prices on consumption, June 19, p 62

on consumption, June 19, p 62
Matthews, Allen S., Portrait, May 8, p
51*
May, F. P., Address by and portrait,
June 19, p 63
McCammon, J. K., Testimony on the
drawback system, April 10, p 6

McCartee, Peter, Biographical sketch of, June 5, p 60*; 12, p 48 McCracken, Thomas:

McCracken, Thomas:
Address by and portrait, March 6, p
85, 87*
Death of, June 19, p 82*
McCurdy, F. S., Portrait, April 3, p 53*
McIntire, W. A., Address by and portrait, March 6, p 63*; 13, p 54*
McKeesport Tin Plate Company, Feb
27, p 32
McKenna automatic water still, Jan 16,
p 11*

p 11* McKenna Brothers Brass Company and

McKenna Brothers Brass Company and employees, Feb 6, p 7 McNamara, H. L. Relations of travel-ing men to retailers, Feb 13, p 64 McPhall, James. Dealers' associations, Feb 20, p 72 McPhee, Hugh. Shop condicions, June 26, p 21

26, p 21

Meat tenderer, Star, Jan 9, p 68*

Mechanical stokers for locomotives,
June 5, p 18*

Mental equanimity, Feb 13, p 56

Mesaba iron ore range, Jan 2, p 60; 16,
p 18; 30, p 23; Feb 6, p 8; March
13, p 19

Mesaba range earth work for 1902 Feb

Mesaba range earth work for 1902, Feb 27, p 1

Metallography in car wheel manufac-ture, Feb 20, p 21* Metallurgy of the cupola, June 19, p 15 Metals, Fluctuations in prices since Metals, Fluctuations in 1890, Feb 13, p 14

Metric system: Attorney-General's opinion, March 13,

Compulsory use of, March 6, p 47; 13,

Director Stratton's opinion, March 13, p 5 Hearings on bill in Congress, Feb 13,

p 22; 27, p 4; June 26, p 10 Lord Kelvin's testimony, May 1, p 21 Machinery supplies and metric sys-tem, March 6, p 7

Mechanical engineers and the metric system, March 6, p 47; 13, p 4 Questions of National Association of Manufacturers, April 24, p 16 Report of House Committee, April 17, p 18

p 18 Report to Franklin Institute, Feb 13, р 3

Shafroth bill, March 27, p 12 Westinghouse, Geo., Views of, May

1, p 22 Mexico: Cerro del Mercado of Durango, March 6, p 12

Coal mine labor, Jan 30, p 26 Commerce, Growth of, March 6, p 32 From the temperate to the torrid zone, Feb 27, p 3 Notes from Jan 16, p 27; 30, p 14; Mexico (continued):

March 6, p 32; 27, p 10; April 24, p 13; May 15, p 5 Patent law amendments, May 29, p

13 Meyer, A. F., Portrait, June 19, p 76*

Meyer, A. F., Portrait, June 19, p 76*
Michigan Retall Hardware Dealers' Association, Jan 23, p 56
Mietz & Welss direct connected kerosene engine, March 6, p 14*
Miles, S. R., Address by and portrait, March 6, p 65b*
Miller, A. F., Portrait, May 8, p 49*
Miller, George B., Biographical sketch and portrait, March 13, p 61*
Miller, Z. T.:
Address by, Feb 27, p 86
Portrait, Feb 20, p 64*
The future hardware trade, Feb 20, p

The future hardware trade, Feb 20, p

Milling machines: Brown & Sharpe, March 20, p 1*
Franklin, March 20, p 11*
Lincoln, April 17, p 13*
Millionaire and the worker in America,

Jan 16, p 12

Mineral production: Great Britain and Germany, May 1, p 5

United States, Jan 16, p 4
World, March 20, p 26b
Mining, Compressed air haulage in,
Jan 9, p 20
Minnesota Hardware Association map,
March 6, p 82

Minnesota Hardware Association map,
March 6, p 83
Minnesota Retail Hardware Association, Feb 13, p 46; March 6, p 83
Missouri Retail Stove and Hardware
Dealers' Association, Jan 23, p 56;
30, p 9; Feb 20, p 50; 27, p 84
Constitution, March 6, p 68
Mitchell, F. D., Portrait, June 19, p 70*
Miter, Aeme, May 29, p 60*
Mixer patent decision, May 22, p 7
Moistener, Wizard, May 15, p 66*
Moldenke, Richard:
Address by, June 19, p 34
Foundry economy, March 27, p 4
Molders' wages in Cleveland, Feb 20,
p 32
Molding machines:

Molding machines:

Discussion of the molding machine, June 19, p 4* Farwell, March 20, p 13*; May 29, p

Lambert curved pipe, April 24, p 12* Stearns, Jan 16, p 26 Tabor vibrator, May 15, p 13 Moore, G. L., Portrait, April 3, p 51* Morehead return trap, Feb 27, p 9* Morgan Oil threading machine, Jan 23, n 19* Morgan Engineering Company, Feb 20,

Morgan Engineering Company, Feb 20, p 43

Morgan, J. P., and shipping interests, April 3, p 24; 24, p 24; May 15, p 3

Morocco trade, June 5, p 63

Mortiser, Wood's automatic hollow chisel, March 27, p 1*

Morton, Henry, Death of, May 22, p 45

Municipal ownership, April 10, p 19; June 26, p 24

Murphy, J. A. Shop tools and rigs, June 26, p 16*

Myers, J. J., Address by, March 6, p 80

Myers, J. J., Address by. March 6, p 80

Nail kegs, Inferior, May 15, p 57 Nail production, May 1, p 52; June 26, p 64

p 64
Nail puller, Suregrip, April 24, p 66*
National Association of Manufacturers,
April 17, p 27; 24, p 16
National Association of Stationary Engineers, May 29, p 40
National Association of Stove Manufacturers, May 22, p 18
National Biscuit Company, Feb 20, p 10
National Bridge Company, Jan 9, p 51;
Feb 6, p 43

Feb 6, p 43

National Bureau of Standards, Jan 30,

p 8 National corporation act, March 13, p 24

National Industrial Association of England, March 20, p 10

National Metal Trades Association, April 10, p 34; 17, p 12 National Mining Company, Feb 20, p 15 National Retail Hardware Dealers' Association, March 13, p 46; 27, p 53*; May 22, p 61
National Steel Refining Company, Jan

30, p 29

Naval coaling station for Puget Sound, Jan 16, p 14 Navy Department, Machinery bids, Jan 23, p 44; April 10, p 21; May 29, p 41

Naylor, B. F., Portrait, Feb 20, p 50* Nebraska Retail Hardware Dealers' As-

Neoraska Retail Hardware Dealers' Association, June 12, p 47; 19, p 76
Nernst lamp, May 29, p 1*
Neudorff, Frederick, Report by and portrait, Feb 20, p 51*; 27, p 84, 86*
Neverslip Tin Cover Company, March

Neversity The Cover Company,
27, p 60

New England Hardware Dealers' Association, Feb 20, p 74; March 20, p
47; April 17, p 49

New England Iron and Hardware Association, March 6, p 78; June 26, p

New York and New Jersey Hardware and Iron Association, April 3, p 50 New York Hardware Jobbers' Associa-tion, June 19, p 81 New York Hardware Jobbers' Associa-

tion and the Pennsylvania Whole-sale Hardware Association in joint meeting, Feb 20, p 76 York Radiator Company, Jan 2,

New York Radiator Company, Jan 2, p 40

New York State Retail Hardware Association, Jan 23, p 56; 30, p 48; Feb 27, p 67; March 13, p 47; 27, p 50; April 24, p 49; May 1, p 54; 8, p 48

Constitution and by-laws, May 1, p 54

New York subway work, June 5, p 1*

Niagara Falls, Electro-chemical industries at, April 3, p 19

Niagara Falls power companies, Feb 6, p 4

Niagara Falls power companies, Feb 6, p 4
Niagara Falls power tunnel inspected, June 5, p 2
Niagara Falls-Toronto power transmission, June 19, p 17
Niagara punch and shear, April 3, p 18*

Nichols, Arthur L., Portrait, April 10, p 58*

Nicholson, S. M., Portrait, June 19, p

Nickel and cobalt production, in 1901,

May 22, p 26
Nickel consolidation, April 10, p 34
Nitrogen, Fixation of, May 15, p 12
Noble prizes, Award of, Jan 2, p 47
Nordyke & Marmon Company, June 5,

p 16
Norris, G. L. Silicon in ferro-silicon,
May 29, p 23
North Dakota Hardware Association

map, March 13, p 50*
North Dakota Retail Hardware Association, Feb 13, p 46; 20, p 70; 27,

Northall lamp, March 27, p 12* Northern Electrical Mfg. Company, Jan

9, p 10

Northern Grinding Company, March 20, p 7

Northern Securities Company, March 6,

Norvell-Shapleigh Hardware Company, "Simply a Record," Jan 2, p 78 Norwalk Iron & Steel Company, Jan 9, p 51

Nova Scotia Steel & Coal Company, Jan 16, p 35; April 3, p 21 Novo air steel, May 1, p 9 Nut tapper, Acme automatic, April 3, p 1*

n-

C-

10

1; 30,

Nutting automatic multiple spindle drill, Feb 27, p 13*

Anderson, J. B., Jan 2, p 61; Auer, John, May 1, p 39 Babcock, Nathan, June 5, p 39; Baker, D. W., Jr., Feb 13, p 32; Bassett, A. J., May 1, p 39; Baxedale, W.

Obituaries (continued):

Dituarles (continued):

J., April 17, p 30; Bender, P. J.,
March 27, p 41; Berdell, Theodore,
Jan 2, p 61; Berthet, F. D., May 1,
p 56; Best, J. W., May 15, p 59;
Biggs, L. M., April 10, p 17;
Bolton, J. E., May 22, p 45; Bray,
T. J., Feb 27, p 36; Brown, T. W.,
June 12, p 26; Brown, W. R., April
3, p 29; Burke, O. M., Feb 20, p 30
Candor, Joseph, Feb 13, p 32; Carr,
Christian, Feb 20, p 31; Christian,
J. P., Feb 13, p 32; Clergue, E. V.,
Jan 30, p 28; Cockley, D. L., Jan
2, p 61; Coggin, F. G., April 17, p
30; Coleman, T. C., Jan 2, p 61;
Crane, N. O., Jan 23, p 28; Crawford, J. A., March 6, p 42; 27, p 28
Darby, H. E., Jan 16, p 52; Deane, C.
P., Jan 30, p 28; Delaney, C. A.,
May 22, p 45; Dewey, O. C., March
27, p 28; Dupont, Eugene, Jan 30,
p 41; Dutcher, P. E., March 27, p
Eaton, W. S., June 5, p 39; Elkins.

Eaton, W. S., June 5, p 39; Elkins, W. L., March 27, p 27; Ensign, Ely, Feb 13, p 32; Evans, J. D., May 22, p 45
Fahrig, H. C., Feb 27, p 36; Farley, J. B., April 10, p 17; Ferrier, James, Feb 27, p 36; Flather, Edward, June 12, p 26; Forbes, A. D., April 10, p 17; Forker, Joseph. April 3, p 29; Fox, W. H., March 6, p 68; French, Aaron, March 27, p 41; Fritsch, J. G., May 8, p 44
Glle, G. H., June 5, p 39; Godman, D. W., Jan 2, p 61; Gourd, E. W., June 12, p 26; Griffin, J. T., Jan 30, p 28; Griswold, Chester, Jan 30, p 28

June 12, p 26; Griffin, J. T., Jan 30, p 28; Griswold, Chester, Jan 30, p 28

Hammond, T. R., May 22, p 45; Harrison, G. W., March 6, p 42; Hartley, Marcellus, Jan 16, p 62, Jan. 23, p 57; Haskins, W. H., May 1, p 39; Haven, J. L., Jan 2, p 61; Havens, W. R., April 10, p 17; Hawes, A. C., Jan 16, p 52; Henry, Patrick, May 22, p 45; Herre, W. F., Feb 13, p 32; Hicks, James, Jan 2, p 61; Hirons, J. B. M., March 20, p 28; Hopkins, William, Feb 20, p 30; Hooper, B. F., May 1, p 39; Hubbard, Norman, April 24, p 40; Hubbell, Lyman, June 5, p 39

Janes, E. R., Jan 16, p 52; Jolliffe.

p 39
Janes, E. R., Jan 16, p 52; Jolliffe, Wm., May 22, p 45
Keizer, L. R., April 3, p 29; King, C. H., Jan. 2, p 61; Kirkpatrick, Joseph, Feb 27, p 36
Lassig, Moritz, Jan 16, p 52; Leeds, A. R., March 27, p 27; Leeds, F. A., March 27, p 8; Leitch, W. H., May 8, p 44; Lewisohn, Leonard, March 6, p 42; Lippman, Morris, May 8, p 44; Little, John, April 3, p 29; Lyon, J. A., March 6, p 61

Macrum, Sibbett, Lee

3, p 29; Lyon, J. A., March 6, p 61

Macrum. Sibbett, Jan 2, p 61; Mann. Robert, May 29, p 49; Martin, C. B., April 17, p 57; McCabe, Owen, May 1, p 39; McCartee, Peter, June 5, p 60; McCombs, Fred, May 8, p 44; McCracken, Thomas, June 19, p 82; McNaughton, W. S., April 24, p 40; Means, C. T., Jan 30, p 41; Meily, John, April 10, p 17; Milholland, James, Jan 2, p 61; Milliken, James, Feb 13, p 32; Milner, J. V., April 17, p 50; Morris, Henry, Jan 30, p 28; Morton, Henry, May 22, p 45

Obendorfer, A. A., Feb 13, p 32

Parker, Charles, Feb 6, p 60a; Parkes, J. C., Jan 2, p 61; Parrott, E. M., May 22, p 45; Pary, Francis, Feb 27, p 36; Penrose, Thomas, April 3, p 29; Pickands, H. S., Jan 2, p 61; Pitard, Gustave, May 1, p 39; Post, W. S., June 5, p 39; Potter, W. L., May 1, p 39; Prager, Julius, Jan 30, p 41; Pratt, F. A., Feb 20, p 30; Proctor, W. F., April 17, p 30

Quimby, E. E., Feb 20, p 31

Quimby, E. E., Feb 20, p 31

Obituaries (continued):

Dituaries (continued):
Richards, Joseph, April 17, p 30;
Roemer, Jacob, March 27, p 28;
Rothery, William, May 22, p 58;
Runser, Sebastian, April 3, p 29;
Russell, N. E., Jan 23, p 28
Sadler, J. G., Jan 9, p 45; Scheeler,
Martin, April 3, p 29; Sessions, J.
H., April 17, p 59; Seyfert, W. M.,
Jan 23, p 28; Shapleigh, A. F.,
March 6, p 62; Skidmore, P. H.,
March 27, p 28; Snead, W. R.,
April 3, p 29, April 17, p 30;
Stroud, W. L., May 1, p 39;
Swaim, J. B., June 5, p 39
Taylor, B. F., Jan 30, p 28; Thomas,
Thomas, April 17, p 30; Treese,
William, March 27, p 28; Troemner, F. W., April 17, p 30; Turner,
C. K., Jan 30, p 53
Varick, J. B., Feb 13, p 50; Feb 20, p
69
Walford, D. N., March 6, p 42; Wal

Walford, D. N., March 6, p 42; Wallace, Andrew, June 5, p 39; Waterbury, W. C., June 12, p 26; Waterman, A. P., Jan 23, p 28; Ward, J. F., Jan 23, p 28; Waterman, A. P., Jan 23, p 28; Ward, J. F., Jan 23, p 28; Wheelock, Jerome, March 6, p 42; White, T. B., Jan 16, p 52; Whitehead, John, April 24, p 40; Whiteside, May 8, p 44; Williams, J. S., Feb 20, p 30; Williamson, C. P., Jan 23, p 28

Odometer, Veeder automobile, March 27, p 59*

Ohio, Hardware association map of, March 6, p 70

Ohio, Hardware association map of, March 6, p 70 Ohio Hardware Association, Jan 30, p 49; Feb 27, p 60; March 6, p 69; April 17, p 48 Ohio Solid Steel Company, May 22, p

Oil cans, National and Nesco, May 1, p 61*

Oil engine, Secor, Jan 9, p 54

Coal vs. oil, March 6, p 1 Discussion by W. W. Reed, May 22, p 20 Fire hazard in core ovens. May 1, p

Heating bars and rivets, March 13, p 5

D 5
Liquid fuel for ships, April 3, p 17
Oil fuel in the Navy, June 19, p 30
Southern Pacific R. R., March 13, p 5
Texas, Tests of oil, Jan 30, p 6*;
April 17, p 10
Oil fuel and oil burners, May 8, p 2

Oilers:
Ironsides Tormay, April 17, p 66*
Rochester automatic, June 19, p 90*
Oldham, W. P., Address by and portrait, March 6, p 55*
Oliver Bros. and Woodward, Wight & Co., Feb 20, p 55
Ontario, Iron ores of Western, April 24, p 4

p 4

Ontario Retail Hardware Merchants' Association, May 15, p 56 Orcutt, H. F. L. Modern machine methods, Feb 6, p 31; 20, p 12; 27, p 16

Organization, Benefits of, March 6, p 65 659

65, 65a
Ore unloading machine at Ashtabula,
Jan 23, p 1*
Osborn, F. F., Memorial resolutions,
April 10, p 58
Osgood lathe and planer guides, June
26, p 23
Otis Elevator Company, Financial report, March 20, p 30

Pacific Coast Borax Company's fire, May 8, p 17*

May 8, p 17*
Pacific Coast news, Jan 30, p 9; Feb 27, p 14; March 20, p 12; April 24, p 11; May 15, p 9; 29, p 43
Pacific Retail Hardware Association, Jan 30, p 49; Feb 6, p 55; 13, p 68
Packing house suit, Manufacturers in-

terested in, June 5, p 12 Paint spraying machine, April 17, p 66* Palmer, W. H., Jr. The storage battery in automobiles, May 15, p 6 Parcels post service between the United States and Bolivia, Jan 23, p 54 Parker, Charles, Death of, Feb 6, p 60a*
Parkersburg Iron & Steel Company,
Feb 13, p 42
Parlin, Albert N., Address by, May 22,

p 18
Patent law, Mexico, May 29, p 13
Patent regulation in France, Feb 6, p 6
Patents, British, April 3, p 57 Pawling & Harnischfeger crane, Jan 2, p 38*

Paxson-Warren sand blast system, June 12, p 11 Payson, L. E., Testimony on labor bill, March 6, p 5 Peck, C. A., Portrait, Feb 6, p 60c*; 13, p 64*

Pencoyd Iron Works: Celebration of, Jan 23, p 20 Development of, Jan 30, p 10 Penman Tank & Boiler Works, Feb 20,

p 29

Pennsylvania Chain Company, Jan 30, p 55 Pennsylvania Retail Hardware Dealers'

Association, March 20, p 47; April 3, p 51 Constitution and by-laws, April 3, p 51

Pennsylvania Steel Company, New steel foundry, Jan 30, p 1* Pennsylvania Wholesale Hardware As-

foundry, Jan 30, p 1*
Pennsylvania Wholesale Hardware Association and the New York Hardware Jobbers' Association in joint meeting, Feb 20, p 76
Pensions. (See Labor)
Peppler, H. C. Co-operative buying, Feb 13, p 58
Persia, Trade with, May 1, p 57
Personals, Jan 2, p 62; 9, p 35; 16, p 48; 23, p 30; 30, p 26; Feb 6, p 33; 13, p 42; 20, p 31; 27, p 45; March 6, p 42; 13, p 28; 20, p 30; 27, p 40; April 3, p 43; 10, p 22; 17, p 44; 24, p 26; May 1, p 46; 8, p 43; 15, p 27; 22, p 45; 29, p 44; June 5, p 55; 12, p 27; 19, p 36; 26, p 43
Peters, W. C., Address by, Feb 6, p 60f
Philadelphia Foundrymen's Association, Jan 16, p 26; Feb 13, p 21; March 13, p 3; April 17, p 22; May 15, p 13; June 12, p 10
Philadelphia Hardware Club, May 15, p 51

51
Philadelphia Hardware Merchants and Manufacturers' Association, Feb 6, p 60f; 13, p 45
Philadelphia rotary shears for cylindrical work, Jan 2, p 10*
Phillips, W. B. The iron resources of Texas, April 17, p 8
Photographs, Enlarged, April 24, p 22
Pierce-Crouch Engine Company, Jan 30, p 17

30, p 17

Pierce Engine Works, May 15, p 19 Pigment, Iron, A new, Feb 6, p 21 Pike Mfg. Company, June 12, p 56 Pinkerton, W. H., Portrait, Feb 27, p 71*

Pinking machine, S. & P., June 12, p 58

Ferguson locking bar pipe, Jan 23, p

Shop tests of steam pipe by Crane Company, June 5, p 4
Specifications, Current, of cast iron pipe, June 26, p 4
Standard pipes, May 15, p 14*
Pipe coverings, Tests of, June 5, p 26
Pipe flanges and flanged fittings, Suggested British standardization, June 19, p 28
Pipe joint, Swiveling, for a 16-inch high pressure steam main, June 5, p 16*

pressure steam main, June 5, p 16*
Pipe machine, Bignall & Keeler duplex,
Feb 13, p 1*
Pipe mill records, May 29, p 23
Pipe molding machine, Lambert, April
24, p 12*
Pipe threads, Standard, May 15, p 14*

Pipe unions:

Jefferson, Feb 20, p 15*
Standard, June 12, p 16
Standard, Report on, Jan 9, p 23*
Piping materials for steam plants, June

5. p 4

Pistol, Oima liquid, May 1, p 64* Pittman, J. M., Address by and por-trait, June 26, p 55*, 56 Pittsburgh Chamber of Commerce, Re-

port on railroads and transporta-tion, Jan 2, p 55

Pittsburgh Coal Company, Jan 9, p 26,

Pittsburgh Foundrymen's Association, Jan 9, p 48; Feb 6, p 48; May 8, n 27

Pittsburgh lathe and boring machine.
Jan 23, p 14*
Pittsburgh manufacturers in the Frick

Building, March 20, p 22 Pittsburgh Plate Glass Company, Feb

Pittsburgh Plate Glass Company, red 13, p 1 Pittsburgh Shear, Knife & Machine Company, Feb 20, p 32 Pittsburgh Stove & Range Company, Feb 27, p 23 Pittsburgh Tool Steel Wire Company, April 24, p 25 Planer, Mammoth sellers, Feb 27, p 1* Planer tool, Whalen, June 12, p 5* Plano harvesting machinery, Jan 23, p 61

p 61 Plants, Depreciation, maintenance and

interest charges on, Feb 27, p 44
Plants for manufacture of hoops and
merchant bars, Jan 16, p 6*
Plate bending rolls, Motor driven, April
24, p 9*

Platinum, Australian, June 5, p.62 Plumb, F. R.:

Manufacturers' associations and their relations to the hardware jobbing

relations to the hardware jobbing trade, June 19, p 59
Portrait, June 19, p 69*
The advantages of associated effort, Feb 6, p 60g
Plumb bobs, Mercury, June 5, p 76*
Plumbago, Ceylon, April 3, p 23
Plummer, John. Australian tin and tin mining, Feb 6, p 9
Pneumatic tool consolidations, Jan 2, p 67; 9, p 15; 16, p 49
Poland, Trade in, June 19, p 81
Pole, Holmes' adjustable, Feb 6, p 64*
Polishing machine, Robinson automatic, June 12, p 1*
Pollock, William B., Company, Jan 16,

Pollock, William B., Company, Jan 16, p 19
Porter, E. F., Portrait, Feb 20, p 62*
Portugal, Trade of, March 27, p 58
Post hammer, New, Jan 2, p 48*
Postage in cities, Jan 9, p 59
Postage cord Useful Lyp 19

Postal card, Useful, June 12, p 54 Pound-kilo reference table, May 29, p 53

Powell, W. R. Illegitimate competi-tion, Feb 27, p 80 Power stations:

Power stations:
Manhattan Railway, March 13, p 6*
New Haven, Pa., March 27, p 9
Powers, F. A., Address by and portrait,
Feb 27, p 63*
Pratt, F. A., Biographical sketch of,
Feb 20, p 30*
Pratt, W. M., Address by and portrait,
June 19, p 73*
Pressed Steel Car Company, Jan 23, p
46; 30, p 40

46; 30, p 40

Presses: Copper banding shells, Jan 23, p 23* Ferracute stamping press, Jan 16, p

Le Blond arbor, March 20, p 9*. Putnam 200-ton hydrostatic car wheel press, Jan 2, p 26* codward & Rogers' drill press,

Woodward & Rogers' drill press, March 6, p 6* Price system of Schofield Company, Jan 9, p 61*

Effect of, on consumption, June 19, p 62

Grading of, May 8, p 57 Pricing stock in plain figures, Jan 9, p

Prince Line to South Africa, May 15, p 51
Profit sharing. (See Labor)
Pruning shear, Folding, April 10, p 64*
Publicity and stock companies, Jan 2, p 47

Puddled iron and Roe machine, May 29, p 14

Fox, April 24, p 65* Grand Rapids, May 29, p 59* Grant overhead window, May 22, p

Ottumwa sash pulley, June 5, p 74* ullman and Wagner consolidation, Opinion of Judge Tully, Jan 16, p 30

Pump curb, June 12, p 60* Pumping engines, Heisler high duty, May 1, p 10*

Pumps:

Buckeye, June 26, p 69* Noppel force and suction, May 8, p

Standard spray, March 20, p 56* Tokheim measuring, June 19, p 89* Twentieth Century, March 20, p 57*

Punch and shear:
Multiple, May 15, p 5*
Niagara combination, April 3, p 18*
Punching bags, Feb 6, p 65*
Ideal, June, 19, p 86*
"New," March 20, p 55*
Punching machines:

Punching machines:
Badger punch and shear, Jan 2, p 45*
Wais-King single and double punch
and shear, March 6, p 12*
Putnam 200-ton hydrostatic car wheel
press, Jan 2, p 26*
Pyrometer, A new, June 26, p 17
Pyrometer patent decision, Jan 23, p 21

Quebec's mineral production, June 12, p 13

Racks for:
Balls of twine, June 19, p 55*
Baseball bats, June 19, p 55*
Belting, Feb 13, p 50*

Cloth and linoleum, June 5, p 68
Screw drivers, Feb 27, p 54*
Washers, June 12, p 49*
Rail committee of civil engineers,
March 20, p 26
Railroad earnings, March 20, p 25

Railroads:
Asia Minor, March 20, p 5*
Buffalo & Susquehanna, May 22, p 13 Building construction of 1901, Jan 2,

p 41 Cape to Cairo, May 1, p 19 Cuban railroad, March 13, p 53 Duluth & Iron Range, March 27, p 11 Improvements in railways, Jan 9, p

Increased carloads, Feb 27, p 28
St. Paul, Improvement, Jan 16, p 19
World's statistics, June 12, p 2
Railroads and freights, Jan 2, p 55; March 13, p 25

Rails: Export trade, Feb 6, p 26 Finishing temperature, June 19, p 11
Production in 1901, Jan 2, p 36
Rerolling mill at Tremley Point,, N.
J., March 20, p 20*

Shrinkage test for steel rails, June 19, p 9

Standard specifications, June 19, p 8 Steel specifications, May 22, p 4 Welding, by Goldschmidt process, Welding, by (Feb 13, p 13

Feb 13, p 13
Railway Spring Company of America,
Feb 13, p 29
Railway Steel Spring Company, May
29, p 10
Ransome, Stafford. The manufacture
of locking bar pipes in Western
Australia, Jan 23, p 6*
Ransome construction, Fire test of,
May 8, p 17*
Ransom emery wheel dresser, Jan 9, p
22*
Rapid transit in New York Tunnel ex-

Rapid transit in New York, Tunnel extension, Jan 2, p 49
"Raysons" and raisins, Jan 16, p 64
Razor stropper, Crescent, Jan 9, p 68*;
23, p 62

Razors: Gem safety, May 8, p 63*
Griffon safety, May 15, p 63*
Le Touriste safety, May 15, p 66*
Removable blade, May 1, p 63*
Ray, W. A. Trade mismanagement,
June 19, p 58

Reading Hardware Company, April 17, p 58 Reading Iron Company, Feb 20, p 29

Reading fron Company, Feb 20, p 29
Receipts for remittances, Jan 9, p 59
Reciprocity in trade, Feb 13, p 68;
April 17, p 2; June 19, p 60
Reciprocity treaties, Jan 9, p 32; March
27, p 8; April 24, p 10
Reed, W. W. Fuel oil, May 22, p 20
Refrigerators:

American, in England, May 1, p 57 Peerless, Jan 16, p 67* Registers:

Registers:
Draft register, May 29, p 58*
H. & C. wrought steel, April 17, p 67*
Reid, David. Methods of increasing
foundry production, June 19, p 18
Reliance Machine & Tool Company,
Jan 23, p 19
Renold silent chain in a structural
shop, March 6, p 1*
Repair tool, Bolton automatic, Feb 20,
p 80*
Republic Iron & Steel Communication

Republic Iron & Steel Company, Jan 16, p 21; 30, p 15; Feb 6, p 49 Reversing gear for rolling mills, Lind-say, Jan 23, p 10* Richards, Joseph:

Biographical sketch, April 17, p 30*
The electro-chemical industries at Niagara Falls, April 3, p 19
Richmond Company, June 19, p 36
Rio Tinto Copper Company, March 13,

p 17 Riter-Conley Mfg. Company, March 20, p 39 Riveting

Riveting machine, Plymouth 1 hand, April 10, p 64*
Roach trap, Illinois, Jan 16, p 66* Plymouth Rock

Roaster, Brown Beauty, April 24, p 64*
Robinson, H F., Portrait, April 3, p 54*
Robinson automatic polishing machine,
June 12, p 1*
Rock River Machine Company, Jan 2,

p 45 Rockwell, Geo. W., Portrait, May 8, p

Roe, James P. Puddled iron and me-

Roe, James P. Puddled from and me-chanical means for its production, May 29, p 1*
Roe puddling machine, May 29, p 1*
Roehr, O. V., Portrait and address, Jan 30, p 57*
Roller chains, Standard dimensions for,

Jan 9, p 32
Rolling Mill Company of America, Feb
13, p 40
Rolling mill for steel car wheels, April

10, p 16*
Rolling of sections in iron and steel,
March 27, p 15*
Rollins, J. G., & Sons, London, Jan 16,

Rolls for plate bending, Motor driven,
April 24, p 9*
Roofing, Stowell, Jan 16, p 66; May 29,

p 57 Roofing tiles, Asphalt, April 3, p 66* Rope, Arrangement for retailing, Feb Rope, Arrange 13, p 71*

Rope attachment, Automatic, April 10, p 64*

p 64*
Rothwell, A., Address by and portrait,
Feb 27, p 66*
Rule blocks, Key seat. May 29, p 59*
Rules, Eagle spring, Jan 30, p 60*
Russell & Erwin Mfg. Company, Officers, Feb 20, p 49
Russell & Erwin Mfg. Company and P. & F. Corbin, Feb 27, p 55

y

n

f,

p

ıt.

Russia:

America and Russia in the near East, March 20, p 4 Commercial travelers in, June 12, p

51

Russia's trade with Great Britain, March 13, p 52 Treasury Department and Russia, June 12, p 3

Safe manufacturers and the carbon point, April 24, p 60
Salesman, The traveling, Feb 13, p 64; 27, p 64; March 6, p 77
Sand blast system, Paxson-Warren, June 12, p 11

Sault Ste. Marie, Remedial works at, March 27, p 11 Saw, Plumbers' hollow mill, June 19, p

994 Saw clamp, Diamond, Feb 6, p 64*

Saw handles: Aluminum, March 13, p 62* Atkins' cross cut, Feb 20, p 81*

Criterion band, April 24, p 66*

Taintor, May 1, p 62* Schaefer, J. V. Washing of bituminous coals by the Luhrig process, Feb 20, p 2*

Scheurer, R. G., Portrait, Feb 20, p 65* Schlafer, O. P., Portrait, Feb 13, p 64* Schmidt, J. C. Reciprocity, June 19, p 60

Schulze, O. C.: Portrait, Feb 6, p 58*

Reciprocity in trade, Feb 13, p 68 Scientific and technical notes, March 6,

p 26; April 3, p 23; May 8, p 6; June 5, p 14 Scofield, H C. Care, management and display of retail hardware, Feb 6,

p 60c Scofield Company's price system, Jan 9, p 61* Scotland:

Coal trade, Jan 30, p 15; March 20, p

Shipping and shipbunding, 3an 2, p
27; June 19, p 24
Shipping merger, Effect of, May 15,
p 3; 29, p 12; June 19, p 24
Steel and shipbuilding, Jan 2, p 27
Trade notes from, Feb 27, p 8
Warrant market, April 10, p 14
Scott, O. M., Address by and portrait,
Feb 27, p 60*
Scow, Bartlett fueling, Feb 13, p 7*
Scraper, Syracuse wheel, April 24, p 65*
Screen doors, Phillips', Jan 2, p 110*
Screw cases, Herrick, April 24, p 66*
Screw drivers:
Gay special, March 20, p 57*
Hurwood, March 27, p 61*
Mann Hold-Fast, Feb 27, p 90*
Screw machines, Camming automatic,
Feb 20, p 16*

Mann Hold-Fast, Feb 27, p 90°
Screw machines, Camming automatic,
Feb 20, p 16°
Screw thread sizes, Proposed standard,
June 12, p 17
Screw trade profit in England, Feb 27.

p 57
Search, Theodore C., Address by, April 17, p 27
Seat, Champion third, Jan 30, p 60*

Secor oil engine, Jan 9, p 5* Seed and fertilizer sowers:

Carmical, May 29, p 61*
Worcester, April 17, p 68*
Seeds in bottles and pails, June 5, p 65*
Seither, Jacob, Portrait, March 13, p 55
Selby Smelting & Lead Company on lead ore drawback, June 5, p 35
Sellors 28 foot beries and turning mill

Sellers 28-foot boring and turning mill,
Jan 23, p 4*
Sellers planer, Mammoth, Feb 27, p 1*
Servia, Metal trade in, April 24, p 59

Servia, Metal trade in, April 24, p 59
Sessions, J. H., Biographical sketch of,
April 17, p 59*
Sewing machine, Smith & Egge automatic, Jan 9, p 66*
Seymour, H. T. England, Germany and
America in the East, Jan 2, p 82
Shackle hook, Keystone safety, Jan 2,
p 108*
Shacklett U. S. Portrait March 6, p Shacklett, U. S., Portrait, March 6, p

Shaft, Large, April 3, p 7*
Shaker, An improvement in crucible steel practice, April 24, p 14
Shaper and shaper vise, Novel adaptation of the, Jan 9, p 8*

Shaping machines:
Cincinnati, March 13, p 1*
New American, June 5, p 17*
Shapleigh, A. F., Biographical sketch,
March 6, p 62*
Sharon Brass Mfg. Company, March 6,

p 15

Sharpener, Bullock, May 15, p 64* Shaw compression shaft coupling, Feb 13, p 23*

Shawinigan Falls, Turbine installation, May 15, p 1* Shearing machines:

Badger punch and shear, Jan 2, p 45* Buckton, for steel blooms. June 26, p

11 Edwards' flying shear, June 5, p 7*
Ham rotary, Feb 6, p 26*
Philadelphia rotary shears for cylindrical work, Jan 2, p 10*
Sheathing paper, Origin of rosin sized,
Feb 20, p 79

Sheep shearing machines, April 10, p 63 Sheet metal working machines, Jan 23,

p 9 Shelf, Bradley detachable, April 17, p 69*

Shells:

Peters', Jan 16, p 66 Press for copper banding, Jan 23, p

Shenango Valley notes, Jan 16, p 15; 23, p 26; Feb 20, p 21; May 1, p 6 Shenango and Mahoning valleys consolidation, April 17, p 29 Shepard, O. A., Address by and portrait, June 26, p 61*, 62 Ship propulsion, Cornell equipment for testing, March 6, p 26 Shipbuilding:

Shipbuilding:
Canada, Jan 23, p 8; Feb 20, p 23;
May 15, p 11
Census Bureau report on American
May 15, p 20

industry, May 15, p 20
Great Britain, Jan 23, p 25; Feb 27, p 12; May 22, p 22
Japan, April 17, p 15
Scotland, Jan 2, p 27; June 19, p 24
Statistics of the Great Lakes, Jan 23,

Statistics for six months, Jan 9, p 38 Testimony on merchant marine and fisheries, April 17, p 14

Shipbuilding consolidation in America,

Shipbuilding consolidation in America, June 12, p 41 Ship subsidy bill, Jan 23, p 18; Feb 27, p 29; March 6, p 17; 13, p 23; 20, p 23; April 3, p 24; 10, p 14; 17, p

Shipping:
Great Britain compared with Germany, May 1, p 6
Great Britain's pre-eminence on the sea, April 3, p 24
Lake steamship earnings, May 8, p 8
World's tonnego Feb 12, p 16

Lake steamsnip earnings, May 8, p 8
World's tonnage, Feb 13, p 16
Shipping merger, April 3, p 24; 24, p 24;
May 15, p 3; June 19, p 24
Shirley, C. H., Address by, Feb 27, p 81
Shoe holder, Coulter, April 3, p 65*
Shooting machine, Toy, March 27, p 60*
Shop conditions, June 26, p 21
Shop foundation on made ground, June

Shop foundation on made ground, June 19, p 14*
Shop tools and "igs, June 26, p 16*
Shot shell trit mer, May 22, p 67*
Shovel, Oldest, in the United States, June 5, p 68
Sifter, Victor, April 24, p 66*
Silicon in ferro-silicon, May 29, p 23
Simmons, Edward C., Biographical sketch, April 10, p 50*
Sites, O. F., Address by and portrait, April 10, p 56*, 57
Skylight, Galesburg, June 12, p 58*
Small vs. large appliances, June 19, p 31
Smith, J. H., Address by and portrait, Feb 27, p 64*
Smoke abatement in St. Louis, Feb 13,

Smoke abatement in St. Louis, Feb 13,

p 8*
Social side of business life, Feb 6, p 58
South, The; her climate, her resources.
her people, June 26, p 51

South Africa:
Duties on goods for the Transvaal,
March 20, p 50
Peace in, June 5, p 31
South Durham Steel & Iron Company,
March 13, p 15

Southern California Retail Hardware and Implement Association, May 15, p 56 Southern Hardware Jobbers' Associa-

tion, May 1, p 51; 29, p 48; June 19, p 56; 26, p 48 Southern Rolling Mill Company, March

6, p 2

Southern Supply and Machinery Dealers' Association, March 20, p 12 Spain, Hardware trade in, May 15, p 49

Spain, Hardware trade in, May 15, p 49
Spaulding & Jennings cold rolling
plant, March 20, p 17*
Special brands, Jobbers', June 12, p 45
Specifications for steel forgings, castings and boiler plates, June 5, p

Specifications for steel forgings, castings and rails, May 22, p 4
Speer, C. E., Address by and portrait,
June 19, p 57*
Spelter, World's production of, March
20, p 27

Spike puller, Pearson Cyclone, Feb 20, p 82* Spokeshaves. May 22, p 65*; June 12,

Spokeshaves, May 22, p 65*; June 12, p 57

Spooling device, Independent automatic, May 1, p 64*

Sportsmen's Show, New York, Jan 30, p 56; Feb 13, p 50; March 6, p 82; 20, p 52

Sprayer, Rippley's, Feb 6, p 65*

Spraying machine for oll paint, April

17, p 66* Spraying pump, Brass bucket, Jan 16, p 68*

Springfield Armory, Machine tool list, Jan 23, p 42; April 10, p 21 Springfield machinery plant at Bridge-port, Jan 23, p 22 Sprinkler, Corrugated, May 29, p 59* Spuhl chain making machine, May 22,

Squares, Combination, March 13, p 634 St. Clair Steel Company, March 20, p 14 St. John Iron and Hardware Association, Jan 30, p 49 St. Louis machinists' agreement, May

29. p 24
St. Louis World's Fair, Power plant,
Jan 23, p 30
Staehle, George. Trusts in their rela-

tion to the retail dealer, March 6, p 65c

Stake, Acme, Feb 13, p 71* Stamping press, Ferracute, Jan 16, p

204

Standard Steel Car Company, Jan 9, p 28; May 29, p 14 Standardization of iron and steel sec-tions, Feb 6, p 28

Standards, National Bureau of, Jan 30,

p 8 Stanley Rule & Level Company, Revised discount sheet, Jan 2, p 77

Steam hammer, New double frame, Feb 6, p 7* Steam pipe coverings, Tests of, June 5, p 26

Steam pipe joint, Swiveling, June 5, p

16*

Steam piping, Shop tests by Crane Company, June 5, p 4 Steam turbines:

De Laval, Jan 9, p 1* Hartford electric light plant, March 6, p 27

Westinghouse, in London, May 1, p 27 Steamship service to the Levant, Jan 23, p 54

Stearns molding machine, Jan 16, p 26 Basic open hearth steel prospects.

Jan 30, p 25 Heat treatment of, Jan 30, p 12*

Melting steel with iron in the cupola, June 19, p 27 Modifications in Bessemer practice

and the scarcity of scrap, May 22. p 24

Novo air steel, May 1, p 9 Steel castings, Manufacture from baby converters, May 22, p 4; June 5, p 32

Steel consumption in buildings, Feb 27, p 28 * Steel frames, Life of, March 27, p 27; April 3, p 26

Steel sections, Standardization of, Feb 6, p 28

Steel production:

Bessemer steel and rails in 1901, March 20, p 7 France, April 10, p 15

Steel production (continued):

Germany, April 3, p 25 Open hearth steel in 1901, April 17, p

26 Statistics for 1901, April 3, p 12 Swank's statistics, June 26, p 18 World's production, Jan 9, p 27

Exports and imports, April 3, p 27; May 1, p 24 Fluctuations in prices, Jan 23, p 22,

Sup.

Sup.
Pittsburgh, in 1901, Jan 2, p 35
Prices not advanced, Feb 6, p 30
Scotland, Jan 2, p 27
Steel Wheel & Wagon Company of
Pueblo, Col., May 15, p 19
Stencil machine, National, June 5, p 74*
Sterling Steel Foundry Company, May

Sterling Steel Foundry Company, May 22, p 16

22, p 16
Stern frame, Building a, March 27, p 6*
Stimson, F. J., on a Federal corporation law, Jan 2, p 51
Stoker, Roney mechanical, Jan 16, p 35
Storage batter in the commercial operation of electric automobiles, May 15, p 6

Stores: Arrangement of, Feb 20, p 54c Competition with supply houses, Feb 20, p 71 Drawers under show windows, June 5, p 66*

Management of, Jan 30, p 54 Sampling stock, June 5, p 69* Swank Hardware Company, May 15,

p 52* Stove boards, Keeping, June 12, p 54*
Stove Founders' National Defense Association, May 22, p 9
Stove pipe, Yale patent lock, April 10,

p 66*

Stove trade, Address by A. Rothwell, Feb 27, p 66 Stove trade consolidation, April 24, p 30 Stow multispeed motor, April 3, p 9* Strikes:

Brass band for picketing, Jan 16, p 25 Central Pennsylvania, May 22, p 27 Chicago. Injunction decision, May 29, p 24

p 24
Cleveland molders,' March 20, p 27
Coal, May 29, p 21; June 26, p 40
Epidemic of, June 12, p 23
Valley furnace, June 5, p 49
Worcester machinists', May 22, p 16, 32; 29, p 11; June 5, p 49; 12, p 42; 19, p 37; 26, p 44
Strong & Trowbridge Company, Jan 9, p 58
Stron, Horsetail, March 6, p 54

Strop, Horsetail, March 6, p 54 Structural shapes, Inadequate capacity for producing, June 26, p 25 Stupakoff, S. H. The molding machine, June 19, p 4*

Success, Honorable, March 6, p 74 Sulphur in iron, Accurate estimation of, by the evolution method, Feb 27, p 7

Sunrise iron mines in Wyoming, Feb 6, p 19*

Superheated steam economics, April 24,

p 25; May 22, p 23 Swank Hardware Company's store, May 15, p 52* Swings, Steel, June 5, p 73*; 26, p 67* Sydney Steel Products Company, Feb

20, p 21 Syndicate buying, May 8, p 57 Systemizing of workshops, May 1, p 12

T.

Table, Three-decked, June 19, p 68 Table, Three-decked, June 19, p 68°
Tabor molding machine, May 15, p 13
Tack pullers, Twentieth Century, Jan
2, p 110°
Tailors' goose, Plural of, Jan 9, p 60;
16, p 58; 23, p 51; Feb 13, p 49
Tallmadge, M. B., Portrait, March 6, p

Tappenden, R. L. Buildin frame, March 20, p 6* Building a stern

Tariff. Australian, Jan 2, p 83; 16, p 60 Babcock bill, Jan 16, p 36; April 3, p

Charcoal bar iron, June 12, p 4

Tariff (continued):

Cuban metal schedule, Feb 6, p 22 Drawback. (See Drawback.)
Flexible tubes and pipes, Feb 27, p 16
London view of export business, May
8, p 54

8, p 54 Lovering bill in Congress, Feb 20, p 11; April 10, p 4; 17, p 5; May 8, p 20; 22, p 10; 29, p 20; June 26, p 15 Nickel plated tin plates, Feb 6, p 25

Purves boiler flues, April 24, p 14
Reciprocity treaties, Jan 9, p 32;
March 27, p 8; April 24, p 10
Ways and Means Committee and Representative Babcock, Feb 6, p 27

resentative Balcock, Feb 6, p 27
Tatham, Edwin. Testimony on drawback question, April 10, p 7
Taylor, John R., Portrait, April 24, p
49*; May 8, p 49*
Technical education vs. shop education,

March 20, p 8
Technical suits at law, March 6, p 9;

13, p 27
Telegraphy, Wireless, Jan 2, p 67; 23, p 27; April 10, p 7
Tennessee Coal, Iron & Railroad Com-

pany, Financial statement, May 8, p 28

Texas:

Iron resources of, April 17, p 8 Notes from, April 24, p 58 Texas Hardware Jobbers' Association,

May 1, p 51

Thompson, Alexis W., on the iron situation, March 6, p 11

Thomson method of making tubes elec-

trically, March 6, p 24.

Thornton Machinery Company, March 6, p 28

Thread rolling machine, Blake & John-

son, June 26, p 1* Threading lathe, Automatic, May 1, p 1*

Threading machine, Morgan coil, Jan 23, p 19*

Ticket punches, June 5, p 76*; 19, p 86* Tidewater Steel Company, March 13, p 18

Timby, Theodore R., and the Monitor turret, April 10, p 7 Tin and sheet mill machinery agree-ment, March 13, p 27

Tin plate:

Australia, Feb 6, p 9
Duty on nickel plated, Feb 6, p 25
Fluctuations in prices, Feb 13, p 14 Tin plate industry, Census report for 1900, June 26, p 27

Tin plate range scale agreement, March 13, p 26; April 10, p 2; June 26, p

42

Tire bender, Ideal roller bearing, June 5, p 72*

5, p 72*
Toilet paper holder, March 27, p 62*
Tomlinson, W. H., Address by and portrait, March 6, p 84*
Tool box, Sheet steel, Jan 16, p 66*
Tool cabinets, White, June 19, p 84*
Tool holders and tools, Jan 2, p 108*
Towel rack with glass balls and bar.
April 3, p 64*
Towne, O. D., Portrait, May 8, p 50*
Townley, H. P., Address and portrait,
Feb 20, p 54d*
Townley's advertisements, Feb 13, p 49

Townjey's advertisements, Feb 13, p 49
Townsend-Downey Shipbuilding Company, Jan 30, p 1
Trace holder, Wabash, April 10, p 66*
Trade-mark bills in Congress, May 1,

p 7

Trade mismanagement and its attend-

Trade mismanagement and its attendant consequences, as viewed from a traveling man's standpoint, June 19, p 58

Trade publications, Jan 2, p 48; 16, p 23; 30, p 39; Feb 27, p 25, 46; March 27, p 28; May 1, p 26; June 5, p 30; 19, p 29; 26, p 21

Trade unions. (See Labor.)

Transom lifter, Reading, Jan 2, p 107*
Trap, Morehead return, Feb 27, p 9*

Traveling crane, Pawling & Harnischfeger electric, Jan 2, p 38*

Traveling man, The, Feb 13, p 64; 27, p 64; March 6, p 77

Treasury Department and Russia, June 12, p 3

12, p 3

Tremley Point rerolling rail mill, March

Truck, Hercules all steel, May 22, p 65* Trusts. (See Consolidation.)
Tubes, Making electrically, March 6, p

24*

Tubing:

Tubing:
Chain pump, June 12, p 60*
Flexible metal, Jan 23, p 22*
Tuley, Judge. Opinion on consolidation
of Pullman and Wagner companies, Jan 16, p 30
Tunnel, Hudson River, March 13, p 28
Iron castings, June 12, p 25
Tunneling under New York City, June
5, p 1*
Tunner memorial, Feb 20, p 7*

Tunner memorial, Feb 20, p 7* Turbines. (See Steam turbines.) Turkey:

Turkey:
Farming implements admitted free of
duty, March 6, p 54
Increasing trade with, Jan 16, p 61
Turner, Theo., Portrait, April 10, p 59*
Twining gear cutter, April 3, p 16*
Tyler, C. C. A proposed standard for
machine screw thread sizes, June 12, p 17

U.

United Copper Company, May 1, p 28
United Engineering & Foundry Company, March 6, p 22
United States Company, Jan 9, p 65
United States Coal & Coke Company,
June 12, p 25
United States Engine Company, Jan 30,

p 4 United States Rubber Company, an experiment in consolidation, May 15, p 58

United States Shipbuilding Company, June 19, p 40 United States Steel Corporation: Banquet, May 15, p 12

Conversion plan and new bond issue,

May 1, p 8 Earnings, Jan 9, p 50 Economies in manufacture, Feb 13, p 24, 27

First annual meeting, Feb 20, p 18 Improvements, May 1, p 39 Pittsburgh coal field, Jan 9, p 28; 16,

Pittsburgh coal field, Jan 9, p 28; 16, p 36
Preliminary report to stockholders, Feb 6, p 16
Rated capacity and actual product, May 1, p 23
Statistics of production, May 8, p 42; '22, p 26
"Underwriting" profits. Feb 6, p 15

"Underwriting" profits, Feb 6, p 15

Uttley, Stuart: American educational wisdom, Jan

30, p 20 Labor in America, Feb 13, p 18 The millionaire and the worker in America, Jan 16, p 12

The struggle for the world's markets, Feb 27, p 30

Valley furnace consolidation, April 17, p 29

Valves, Watson-Stillman hydraulic, Jan 9, p 14* Van Hise, C. R. Report on the Lake Superior ore region, Jan 23, p 12 Van Wagoner, C. S., Portrait, June 19, p 60* p 694

Van Wagoner Company, June 5, p 66 Van Winkle, J. A., Company, April 10, p 54*

Varick, J. B., Biographical sketch, Feb 20, p 69*
Veeder Mfg. Company, March 27, p 59
Vegetable masher, Royal, Feb 6, p 65*
Ventilator, Buffalo improved, May 8, p 62*

Vermillion range, Jan 30, p 23 Vickers, Sons & Maxim, Annual report, March 27, p 20 Vincent, H. S., Portrait, March 13, p 57*

p

Vise, Lightning, April 24, p 64*
Vollkommer, T. J. Modern plants for
the manufacture of hoops and
merchant bars, Jan 16, p 6*

Vulcan motor driven water tool grind-er, March 6, p 10*

Wabash gasoline engine, April 10, p 3* Wachter, E. L., Portrait, Feb 27, p 85*

English criticism of American wages, April 3, p 4

Molders' wages, Feb 20, p 32; April

Molders' wages, Feb 20, p 52; April 10, p 9; 24, p 30 Scotland, Jan 2, p 29 Sheet metal, Jan 30, p 17; March 20, p 41; 27, p 24; May 8, p 23 Tin plate scale, Mar 13, p 26; April 10, p 2; June 26, p 42

(See also Labor.

Wagner, Paul, Address by and portrait, March 6, p 56* Wais-King Tool Company, Jan 9, p 4 Walker, Robert A. The Pittsburgh iron trade in 1901, Jan 2, p 30 Walker & Pratt stove foundry, June 26 Walker & Pratt stove foundry, June 26,

p 12 Wall ties, Taft, June 5, p 724

Walters, H. E., and Robert Miller. Esti-mation of sulphur in iron, Feb 27, p 7

Warner & Haviland, New York, March

20, p 48
Warren, J. D., Address and portrait.
Feb 20, p 54c*
Warwick Iron & Steel Company. Annual report, Feb 27, p 15
Washing machine, U. S. steel, May 15, p 64*

Washing of bituminous coals by the Luhrig process, Feb 20, p 2* Washtub, Galvanized steel, May 29, p

58*

Waste can, Galvanized oily, March 20, p 58*

Water, Drinking, for workmen, May 8, p 5

Water pipes, Cast iron or steel, Man-chester, Eng., May 1, p 17 Water still, McKenna automatic, Jan 16, p 11*

Waterbury Brass Company, Feb 20, p

79 Water proof covering for machinery, Feb 20, p 15

Watson, E. P.:
A possible solution of a perplexing

question, Jan 30, p 27 Oil fuel and oil burners, May 8, p 2

Technical education vs. shop educa-tion, March 20, p 8
Technical suits at law, March 6, p 9
The present aspect of the labor ques-tion, Jan 2, p 22 The systematizing of workshops, May

1, p 12 Watson-Stillman hydraulic valves, Jan

9, p 14*

Welding: Electric, in Germany, Feb 13, p 3 Goldschmidt process, Jan 16, p 5; Feb

13, p 13
Welding machine, Electric, for range boilers, Jan 2, p 24*

Wellman-Seaver plant, Feb 27, p 47; April 3, p 18 Western Iron & Steel Company, May 1, p 27

Westinghouse Company: British workmen, Jan 23, p 14

Buildings in Manchester, Eng., March 13, p 17 Westinghouse Machine Company and

Westinghouse Machine Company and contracts for blowing engines, March 27, p 13
Wetter, H., Mfg. Company, May 22, p 5
Whalen planer tool, June 12, p 5*
Wheel hoe, hill and drill seeder, Iron Age, Jan 23, p 62*
While, A. S. Rolling of sections in iron and steel, March 27, p 15*
White, John C., Address by and portrait, Feb 6, p 55, 56*; April 10, p 57*
White lead process Bailey, Jan 16, p 66

White lead process, Bailey, Jan 16, p 33 Whitewash and painting machine, Jan 30, p 60*

Whitney, A W. Metallography in car wheel manufacture, Feb 20, p 21*

Whitney, H. E. Decorating sheet steel

painted ware, Jan 9, p 16*
Williams, C. H. Mental equanimity,
Feb 13, p 56

Williams, Hamp, Portrait, June 26, p

Williams, Oliver, Portrait, June 19, p

Williams, R. R., Address by, Feb 27, p

Willis, F. B., Address by, March 6, p 75 Willis, J. N. The proper basis of credit, June 19, p 65 Wilmarth & Morman Company, Jan 2,

p 49 Winding field coils from flat copper

Winding field coils from flat copper strips, Jan 2, p 1*
Window display;
Art of selling and window display, Feb 27, p 76
Chameleon whirligig, June 12, p 49*
Farm in miniature, Jan 30, p 50*
Fishing tackle, May 29, p 51*
Framework for dummy, Jan 23, p 59*
Hardware store, June 19 p 82*

Framework for dummy, Jan 23, p 59*
Hardware store, June 19, p 82*
Iron Age display, Jan 2, p 93
Prices in windows, Feb 13, p 52
Seed window, June 26, p 54
Shears, May 8, p 60*
Skate window, Jan 9, p 60*
Study of arrangement of goods, Feb
27, p 58
Suggestions Feb 12, p 51

Suggestions, Feb 13, p 51 Suggestions by A. B. Guenther, Jan

Suggestions by A. B. Guenther, Jan 23, p 59 Window screen, New Twentieth Cen-tury, Feb 20, p 81* Wire drawing, Diamond in, May 29, p 8 Wire nail production, May 1, p 52; June 26, p 64

Wire netting, Sale by weight, June 12, p 50

Wire papering machine, Wright, April 10, p 1* Wire rod production in 1901, May 1, p

Wire straightening and cutting ma-chine, Hoefer, Jan 2, p 42*

chine, Hoefer, Jan 2, p 42*
Wireless telegraphy, Jan 2, p 67; 23, p
27; April 10, p 7
Wisconsin Retail Hardware Association, Jan 16, p 57; Feb 6, p 60b;
13, p 61; 27, p 88
Constitution and by-laws, Feb 13, p 62
Wiseman, H. C., Address by, March 6,

p 77a

Witzenmann metal hose, Jan 23, p 22* Wood, F. W. Testimony on the draw-back system, April 10, p 4 Wood, Walter. Testimony on the draw-

Wood, Walter. Testimony on the draw-back system, April 10, p 5 Wood carbonizing in America and its future, Jan 2, p 53 Wood electric welding machine for range boilers, Jan 2, p 24 Wood's automatic hollow chisel mor-tiser, March 27, p 1*

Woodward & Rogers new drill press, March 6, p 6*

Worcester industries, Jan 9, p 34; 30, p 24; Feb 27, p 23; March 6, p 47; 27, p 14; April 10, p 3; 24, p 21; May 22, p 3; June 5, p 15; 26, p 2
Worcester Polytechnic Institute, Gift to, Jan 9, p 28

Workshops, The systematizing of, May 1, p 12 World's markets, The struggle for, Feb 27, p 30

Wrenche

Drop forged 15-degree angle wrench, Feb 20, p 82* Pipe and monkey wrench, June 12, p

Triumph fruit can, March 13, p 61* Universal ratchet, March 27, p 61* Wright bundle wire papering machine,

April 10, p 1* Wright-Dana Hardware Company,

April 3, p 62 Wright Taper Roller Bearing Company, Feb 13, p 13

Wringers, Automatic, Jan 9, p 66*

Yacht, Bronze, "Weetamore," May 8,